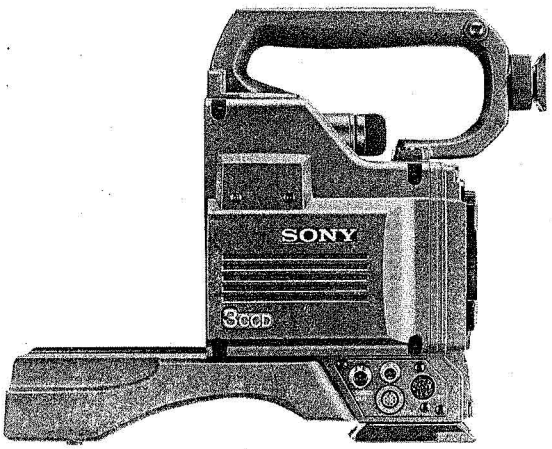
DXC-325P

COLOR VIDEO CAMERA



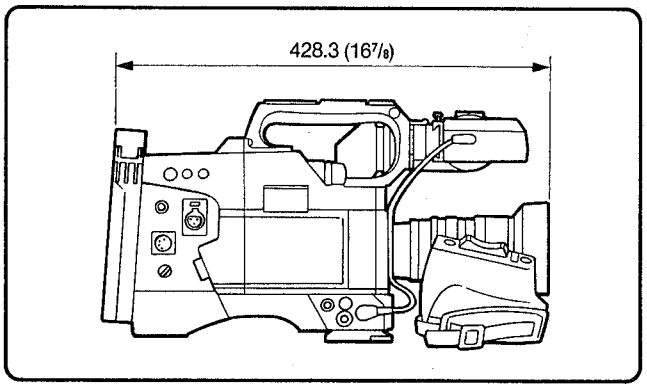
SPECIFICATIONS

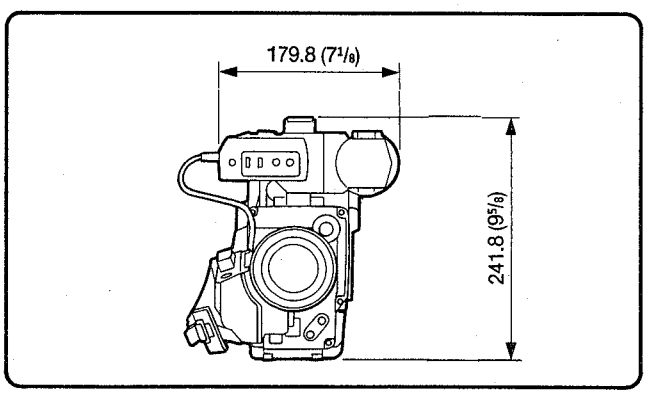
Camera head (DXC-325/325P) and camera adaptor (CA-325/325P)

Image device	Interline-transfer CCD, 3-chip
Picture elements	510 × 492 (h/v) (NTSC) 500 × 582 (h/v) (PAL)
Sensing area	6.4 mm × 4.8 mm (equivalent to a 1/2-inch pickup tube)
Built-in filters	1: 3200 K 2: 5600 K + 1/8 ND 3: 5600 K
Lens mount	Bayonet mount
Signal system	EIA standards, NTSC color system (for DXC 325) CCIR standards, PAL color system (for DXC 325P)
Scanning system	525 lines, 2:1 interlace, 30 frames/sec. (NTSC) 625 lines, 2:1 interlace, 25 frames/sec. (PAL)
Scanning frequency	Horizontal: 15.734 kHz (NTSC) 15.625 kHz (PAL) Vertical: 59.94 Hz (NTSC) 50.00 Hz (PAL)
Sync system	Internal External with the BS or VBS signal supplied to the GEN LOCK input connector or the reference signal input to the VTR/CCU/CMA connector from the GEN LOCK connector of the CCU-M3/M3P
Horizontal resolution	530 lines (center)
Minimum illumination	20 lux with F1.4, + 18 dB (NTSC) 20 lux with F1.4, + 18 dB (PAL)
Sensitivity	2000 lux with F5.0, at 3200 K (NTSC) 2000 lux with F5.0, at 3200 K (PAL)
Gain selection	0 dB, 9 dB or 18 dB, selectable
Video output	Composite signal: 1.0 V(p-p), sync negative, 75Ω unbalanced Y/C separate signal: Y: 1.0 V(p-p), sync negative, 75Ω unbalanced C: burst level 0.286 V (NTSC) 0.3 V (PAL) 75Ω without sync
Signal to noise ratio	58 dB (NTSC) 56 dB (PAL)
Registration	0.05 % for Zone I 0.05 % for Zone II 0.05 % for Zone III

SONY®

Inputs/Outputs	VTR/CCU/CMA connector: Sony Q-type, 14-pin DC IN: XLR-type, 4-pin MIC IN: XLR-type, 3-pin GEN LOCK: BNC-type VIDEO OUT: BNC-type LENS: 1/2-inch lens connector (7-pin) 2/3-inch lens connector (6-pin) VF: 8-pin EAR: mini jack INTERCOM: mini intercom TITLE: 8-pin
Power requirements	12 V DC
Power consumption	8 W (without viewfinder)
Operating temperature	−5°C to +45°C (23°F to 113°F)
Storage temperature	−20°C to +60°C (−4°F to 140°F)
Weight	3 kg (4 lb 7 oz)
Dimensions	See the illustrations below. Unit: mm (inches)





Carrying case (LC-325)

Weight	Approx. 4.4 kg (9 lb 8 oz)
Dimensions	Approx. 608 × 260 × 386 mm (w/h/d) (24 × 10 1/4 × 15 1/4 inches)

Accessories supplied

CCQ-2BRS camera cable (with Q-type 14-pin connectors) (supplied with the DXC-325K/325PK/325L/325PL only) (1)
CA-325/325P camera adaptor (supplied with the DXC-325K/325PK/325L/325PL only) (1)
VCL-810BX zoom lens (supplied with the DXC-325K/325PK only) (1)
DXF-325/325CE electronic viewfinder (supplied with the DXC-325K/325PK/325L/325PL only) (1)
LC-325 carrying case (supplied with the DXC-325K/325PK/325L/325PL only) (1)
Lens cap (1)
Chart for flange focal length adjustment (1)

Design and specifications are subject to change without notice.

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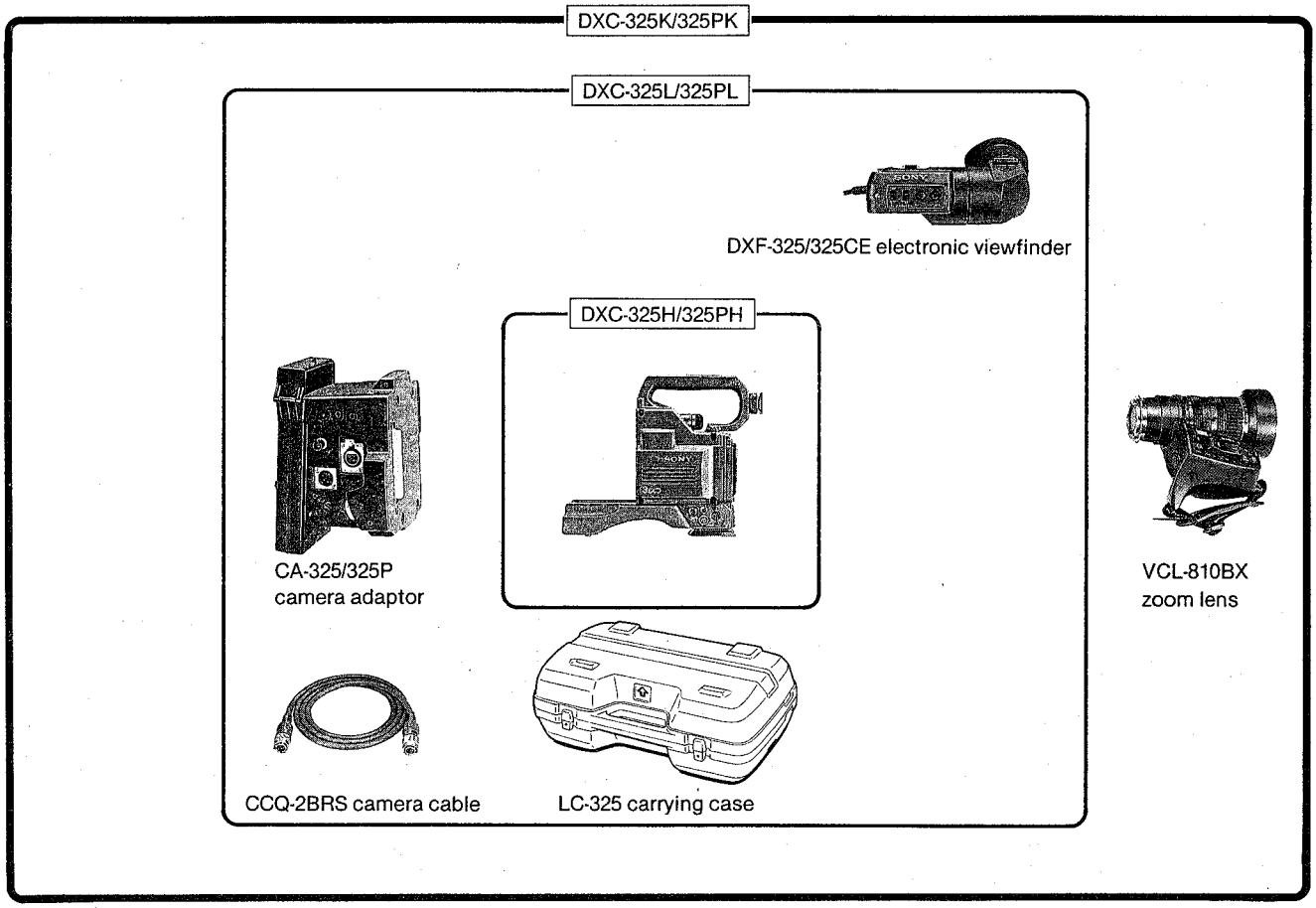
SECTION 1
GENERAL DESCRIPTION

Composition

This instruction manual is for both the DXC-325 series (DXC-325K/325L/325H) and the DXC-325P series (DXC-325PK/325PL/325PH) color video cameras. These two types of cameras are designed for different signal systems, the NTSC and the PAL systems. So each type of camera must be used with the equipment which matches its signal system, but the operating procedures for both series are the same. The DXC-325 series is for the NTSC color system, and the DXC-325P series is for the PAL system.

The DXC-325K/325PK, the DXC-325L/325PL and the DXC-325H/325PH comprise slightly different components, as noted below. However, the operating procedure for the camera itself is the same.
If you use a zoom lens other than the VCL- 810BX zoom lens, refer to the lens' instruction manual for information about its operation.



Model / Composition	DXC-325K/ 325PK	DXC-325L/ 325PL	DXC-325H/ 325PH
Camera head DXC-325/325P	Yes	Yes	Yes
Camera adaptor CA-325/ 325P	Yes	Yes	No
Zoom lens VCL-810BX	Yes	No	No
Viewfinder DXF-325/325CE	Yes	Yes	No
Carrying case LC-325	Yes	Yes	No
Camera cable CCQ-2BRS	Yes	Yes	No
Chart for flange focal length adjustment	Yes	Yes	Yes

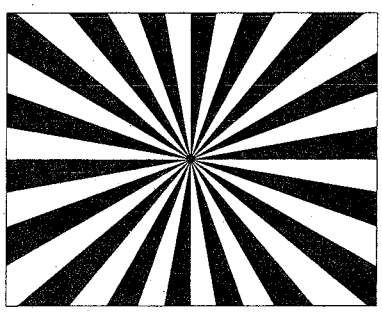


Chart for flange focal length adjustment

Features and Notes on Use

Features

The DXC-325/325P is a newly designed portable color video camera employing three 1/2-inch Charge Coupled Device (CCD) imagers each having a total of 250,000/290,000 (for the NTSC and PAL models respectively) effective picture elements. The DXC-325/325P is normally used with the CA-325/325P camera adaptor as a single camera unit, but, if necessary, it can be separated from the camera adaptor and can be used with a variety of different units which will be introduced in the market in the near future. The camera can be used for outdoor recording when used with a portable video cassette recorder, and can also be used as a studio camera when connected to a CCU- M3/M3P camera control unit.

Adoption of CCD

- Incorporation of a CCD results in a compact, lightweight camera body which consumes less power than does a camera using pickup tube(s).
- Low lag, high resistance to image burning and no deflection distortion.
- The CCD is not affected by vibration and mechanical shock.
- The CCD imager is not influenced by terrestrial magnetism.
- Thanks to the high signal-to-noise ratio, the video output level can be raised by 9 dB or 18 dB to obtain a clear picture under low light conditions.
- The electronic shutter is built into the imagers and enables the DXC-325/325P to produce clear images even when the objects it is shooting are moving at very high speeds. The advantages of this function are most obvious during playback of still or slow motion pictures.

Various connection capability

- The camera can be used as a studio camera when connected to a CCU-M3/M3P camera control unit.
- The camera can be connected to an S-VHS format VTR.
- If a special adaptor (will be introduced in the near future) is attached to the DXC-325/325P camera head, it can output an RGB format signal.

Power sources

- A compartment for the NP-1A battery pack is built into the camera adaptor. The camera and 1.5-inch viewfinder can be used for about 120 minutes with a fully charged NP-1A (optional).
- The power can be supplied to the camera from a portable VTR or from the CCU-M3/M3P camera control unit.
- A CMA-8/8CE camera adaptor (optional) is needed if the camera is to be used with the AC power source.

Automatic adjustment and memory functions

- The white balance and black balance are automatically adjusted by a microcomputer, and the adjusted values are retained for about 12 hours while the camera's power is off.
- The black level drift is automatically adjusted, together with the black balance.
- If the entire picture is too bright, the black level is lowered to the appropriate level by the automatic black level (ABL) adjustment so that a picture with good contrast can be obtained.

Display and related functions

- The character generator built into the camera displays title characters to be inserted on the viewfinder or monitor during recording.
- In addition to title characters, the operational status of the camera and the warning indications are also displayed on the viewfinder.
- The REC indicator on the viewfinder blinks if a VTR malfunctions.
- Zebra pattern appears on the viewfinder screen when the video output level is about 70 to 80 IRE (for NTSC model) or 490 to 560 mV (for PAL model). This pattern provides a useful reference when the operator manually adjusts the iris.

Cordless electrical connection to the VCL-810BX camera lens unit

- The DXC-325/325P is equipped with a pin-type lens connector which connects directly to the electrical circuitry of the lens unit. The lens can thus be controlled from the video camera without using a lens cable.

Location of controls to avoid misoperations

- The switches which are not used frequently are located behind the cover on the side panel so that you can forget about possible misoperations while you are using the video camera.

Newly designed camera body and lens grip

- The camera will be well balanced on your shoulder when holding it with the lens grip. In addition, you can see to your right over the camera body while you are shooting.

Precautions

Safety
- Do not try to mount a 2/3-inch lens directly on the DXC-325/325P.
  Be sure to attach an LO-32BMT lens mount adaptor (optional) to your 2/3-inch lens if you want to mount it.
- Operate the camera only on 12 V DC. For operation from an AC power line, use the camera adaptor recommended for this camera.
- Allow adequate air circulation to prevent internal heat build-up.

Operation
- Avoid rough handling or mechanical shock.
- Do not operate the camera outside a −5°C to +45°C (23°F to 113°F) temperature range.
- Keep the camera in a horizontal plane.
- Keep the camera away from very strong magnetic fields to avoid distortion and flutter on the screen.
- Do not hold the camera by the viewfinder.
- Be sure to cover the lens with the supplied lens cap when the video camera will not be used for a long period of time.

Operation of the viewfinder
- Do not point the viewfinder directly at the sun, or the plastic inside the viewfinder may be damaged.
- The picture on the viewfinder screen may be distorted if it is used in strong magnetic fields.

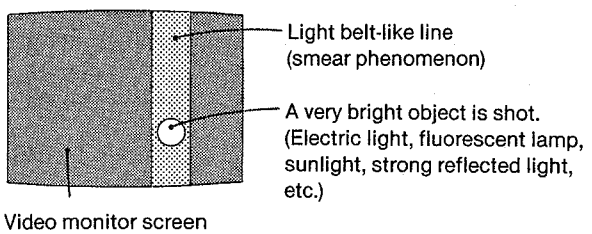
Cleaning
Clean the cabinet, panel and controls with a dry soft cloth, or soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzine, which might damage the finish.

Repacking
Do not discard the carton. It affords maximum protection whenever the camera is transported. Do not transport or ship the camera only in the carrying case. Repack it as it was originally packed at the factory.

Special Characteristics of a CCD

The following phenomena may appear on the monitor screen while the DXC-325 series color camera is used. These phenomena are not indicative of a camera malfunction.

Smear phenomenon
This may appear when a very bright object is shot.


Light belt-like line
(smear phenomenon)
A very bright object is shot.
(Electric light, fluorescent lamp, sunlight, strong reflected light, etc.)
Video monitor screen

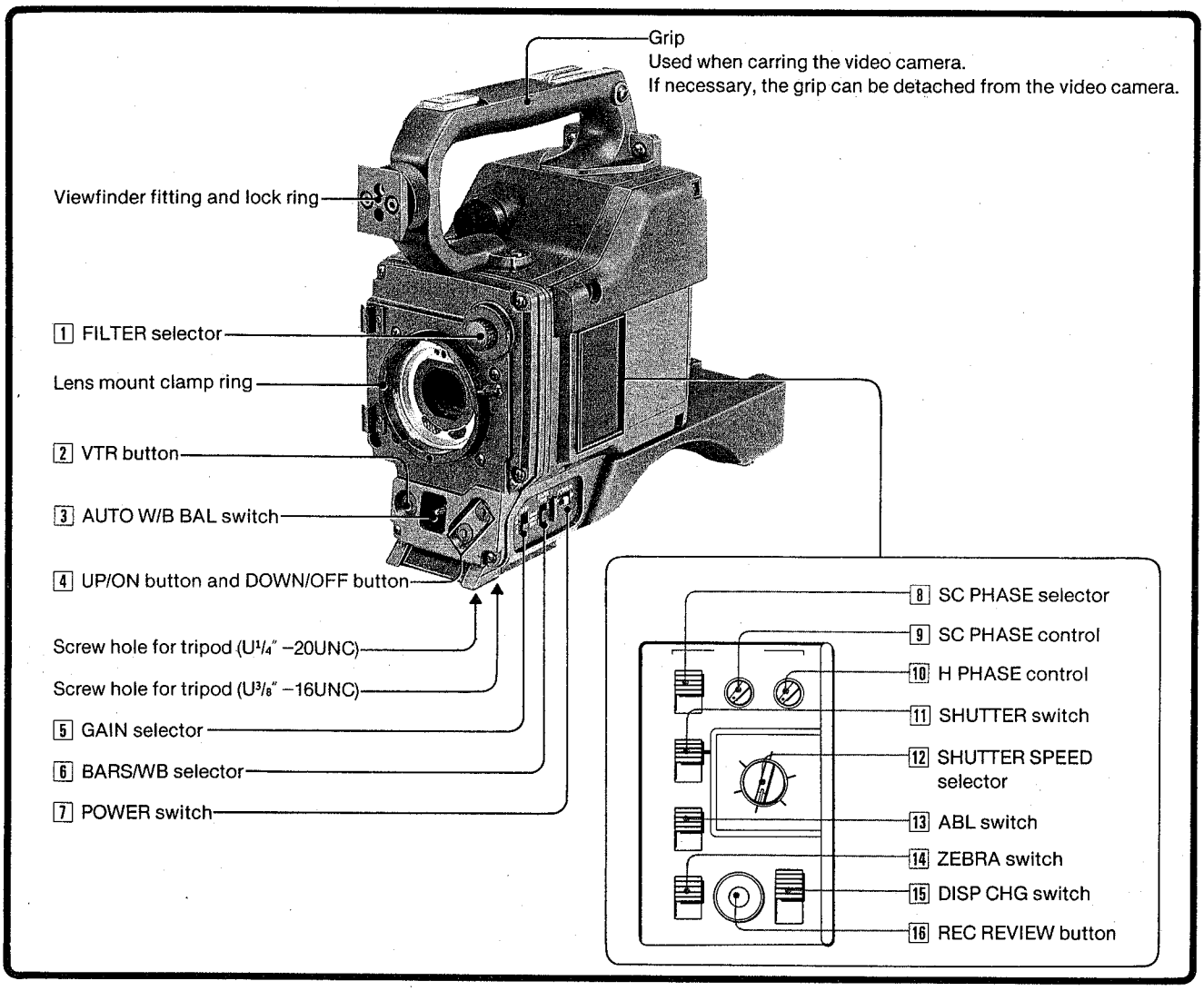
White dots
White dots may appear in the video output if the camera is used under very high temperatures.

Wavy pictures
This may appear when fine stripes, straight lines, etc., are shot. Their images monitored on the screen look wavy.

Note on the electronic shutter
If the GAIN selector is set to the 18 (dB) position when the electronic shutter is used, a clear picture may not be obtained. Use the electronic shutter under the lighting conditions under which a clear picture is obtained with the GAIN selector set to the 0 or 9 (dB) position.

Location and Function of Controls

DXC-325/325P Camera Head


Grip
Used when carring the video camera.
If necessary, the grip can be detached from the video camera.
Viewfinder fitting and lock ring
1 FILTER selector
Lens mount clamp ring
2 VTR button
3 AUTO W/B BAL switch
4 UP/ON button and DOWN/OFF button
Screw hole for tripod (U1/4" –20UNC)
Screw hole for tripod (U3/8" –16UNC)
5 GAIN selector
6 BARS/WB selector
7 POWER switch
8 SC PHASE selector
9 SC PHASE control
10 H PHASE control
11 SHUTTER switch
12 SHUTTER SPEED selector
13 ABL switch
14 ZEBRA switch
15 DISP CHG switch
16 REC REVIEW button

1 FILTER selector

Select the appropriate filter as indicated below.

Filter number	Color temperature	Lighting conditions
1	3200K	Iodine lamp, sunrise or sunset
2	5600K + 1/8 ND*	Bright outdoor
3	5600K	Cloudy or rainy

*ND: Neutral density filter

2 VTR button

When the camera is connected to a portable VTR, press this button to start recording. To stop recording, press the button again. If the camera is connected to a CCU-M3/M3P camera control unit, the return video pictures can be monitored on the viewfinder screen while the button is kept depressed. When the button is released, the camera pictures can be monitored.

3 AUTO W/B BAL (automatic white/black balance adjustment) switch

When the BARS/WB selector 6 is set to AUTO, white balance and black balance can be automatically adjusted with this switch. Black balance can also be adjusted automatically with this switch when the BARS/WB selector is set to 3200K.

WHT: For automatic white balance adjustment, push this switch to WHT. The adjusted value will be automatically stored in the memory.

BLK: For automatic black balance and black set level adjustment, push this switch to BLK. The adjusted value will be automatically stored in the memory.

This switch automatically returns to the center position when it is released.

[4] UP/ON button and DOWN/OFF button
These buttons are used with the DISP CHG [15] switch (1) to set and position the title characters, (2) to switch the "LOW LIGHT" indication on or off, (3) to raise or lower the reference level of the automatic iris adjustment, or (4) to raise or lower the master pedestal level. For details, refer to "Warning Indicators and Character Display" on page 1-27.

[5] GAIN selector
Normally set this selector to "0". When the selector is set to "9" or "18", the video output level is raised by 9 dB or 18 dB respectively.

[6] BARS/WB (color bar generation/white balance adjustment) selector
BARS: When the selector is set to this position, a color bar signal is generated, supplied to the viewfinder and output from the VIDEO OUT and the VTR/CCU/CMA connectors on the CA-325/325P. Use this position for adjusting the video monitor. At this position, the iris of the zoom lens attached to the camera will be automatically closed.
AUTO: Generally set the selector to this position. When the AUTO W/B BAL switch [3] is set to WHT or BLK, the white balance or black balance will be automatically adjusted (and stored in the memory). After the adjustment, the memorized white balance and black balance values are always obtained at this position.
3200K: At this position the white balance is set to the factory preset value of an iodine lamp (3200K). When the selector is set to this position, set the FILTER selector [1] to an appropriate position. Use this position when there is no time to adjust the white balance. When the BARS/WB selector is set to this position, the automatic white balance adjustment of the AUTO W/B BAL switch [3] will not operate. (However, the automatic black balance adjustment of the AUTO W/B BAL switch [3] operates.)

[7] POWER switch
ON: To turn on the camera
OFF: To turn off the camera

[8] SC (subcarrier) PHASE selector
When two or more cameras are used simultaneously, select the SC phase difference between the gen-lock input and video output signals so that it is roughly adjusted to 0° or 180°. (See page 1-25.)

[9] SC (subcarrier) PHASE control
When two or more cameras are used, this control is used for fine adjustment of the SC phase after the rough adjustment performed by the SC PHASE selector [8]. (See page 1-25.)

[10] H (horizontal) PHASE control
When two or more cameras are used, turn this control with a small screwdriver to adjust the H phase difference between the gen-lock input and video output signals. (See page 1-25.)

Notes
- It is not necessary to use this control when only one camera is used.
- When a camera control unit is connected, adjust the H phase difference with the H PHASE control of the camera control unit.

[11] SHUTTER switch
ON: The SHUTTER SPEED selector [12] is activated.
OFF: Normally, set at this position. This deactivates the SHUTTER SPEED selector [12].

[12] SHUTTER SPEED selector
Used to switch the shutter speed.
The following six shutter speeds can be selected on this camera head.
DXC-325: 1/60, 1/100, 1/250, 1/500, 1/1000, 1/2000 sec.
DXC-325P: 1/60, 1/120, 1/250, 1/500, 1/1000, 1/2000 sec.

[13] ABL (automatic black level) switch
When the entire picture is too bright, such as during outdoor shooting, set this switch to ON. The black level will be reduced to the appropriate level, and a well-contrasted picture will be obtained.
Normally set the switch to OFF.

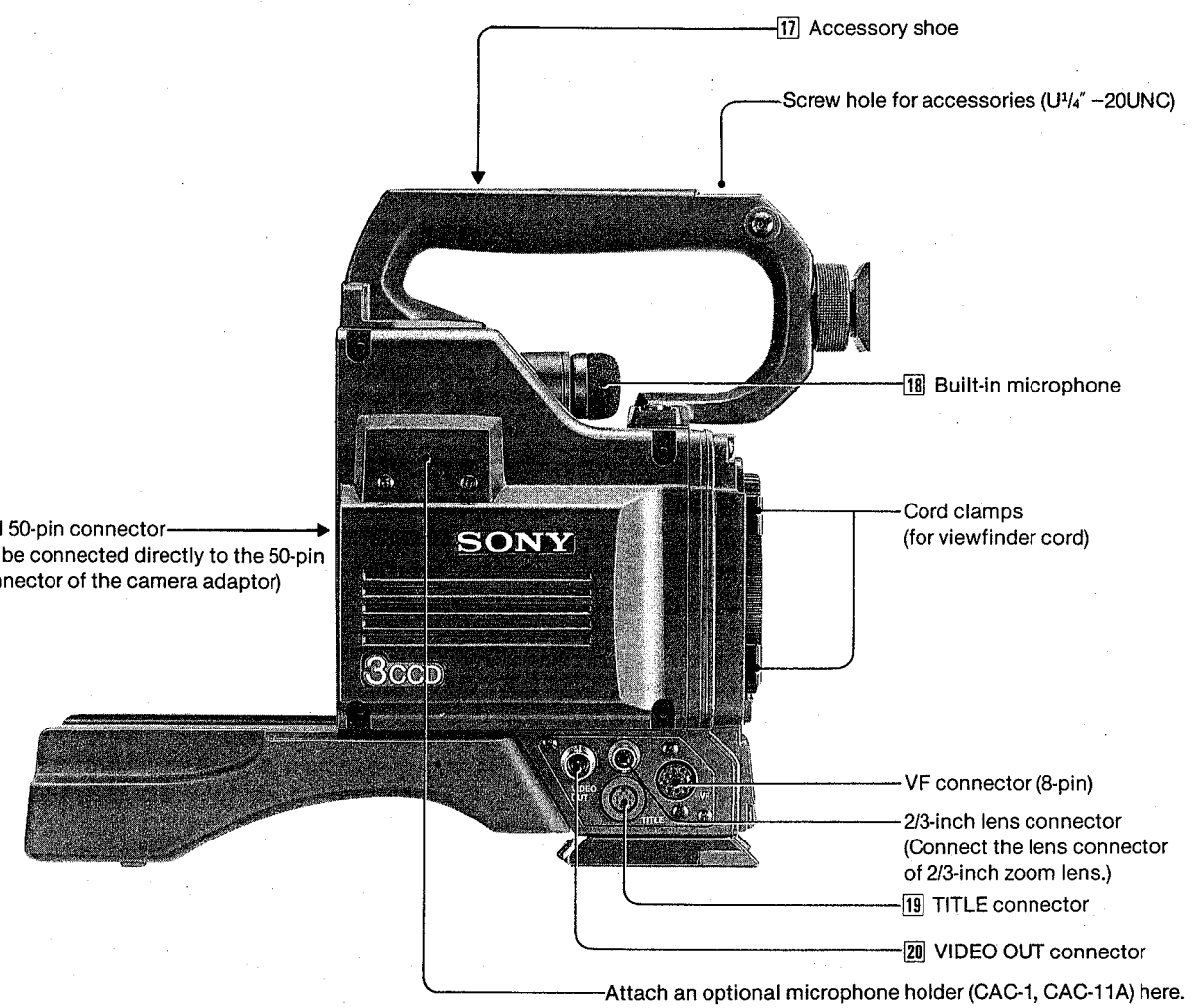
[14] ZEBRA switch
This switch is used for manual iris adjustment. When the switch is set to ON, a zebra pattern appears as a reference on the part of the viewfinder screen where the video level of the object is 70 to 80 IRE (for NTSC) or 490 to 560 mV (for PAL). If the zebra pattern is not necessary, set this switch to OFF. (See page 1-24.)

[15] DISP CHG (display change) switch
Each time this switch is pressed, the character display on the viewfinder screen changes in the following order: (1) alarm indication, (2) "LOW LIGHT" indication on/off, black balance, white balance, and gain settings, (3) initial indication of title setting and display of set title characters, (4) reference level setting for automatic iris adjustment, and (5) master pedestal level setting. For details, refer to "Warning Indicators and Character Display" on page 1-27.

Note
In the character display modes (3) to (5), the automatic white balance and black balance adjustment systems do not function.

[16] REC REVIEW button
Not used.

DXC-325/325P Camera Head


17 Accessory shoe
Screw hole for accessories (U1/4" –20UNC)
18 Built-in microphone
DIN 50-pin connector
(To be connected directly to the 50-pin connector of the camera adaptor)
Cord clamps
(for viewfinder cord)
SONY
3CCD
VF connector (8-pin)
2/3-inch lens connector
(Connect the lens connector of 2/3-inch zoom lens.)
19 TITLE connector
20 VIDEO OUT connector
Attach an optional microphone holder (CAC-1, CAC-11A) here.

17 Accessory shoe
An optional DXF-40A/40ACE or DXF-50/50CE viewfinder can be attached here. For viewfinder attachment, refer to the viewfinder's instruction manual.

18 Built-in microphone
When the camera cable is connected to a portable VTR, the built-in microphone is automatically connected, so a sound recording can be made simultaneously with the video recording.
When an external microphone is connected to the MIC IN connector on the CA-325/325P, the built-in microphone does not function.

19 TITLE connector (8-pin)
A TGR-325 title generator (optional) is to be connected to this connector.

20 VIDEO OUT (output) connector (BNC connector)
Connect to the video input of the VTR or video monitor. Title characters displayed on the viewfinder screen are also output from this connector.

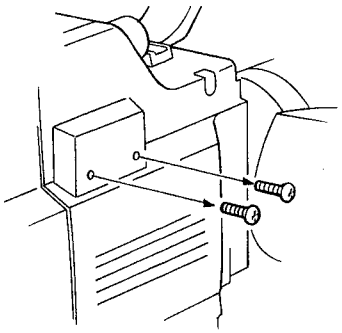
Accessory Attachment

Microphone Attachment

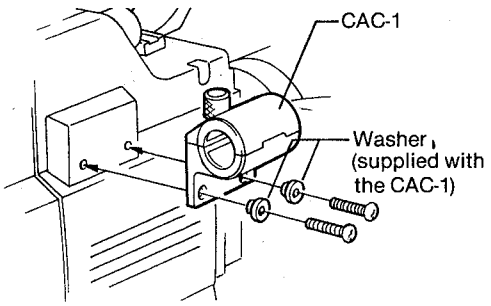
In order to use an ECM-672 external microphone (optional), first attach a CAC-1 or CAC-11A microphone holder (optional) to the camera head.

The CAC-11A microphone holder can also be attached in the same manner.

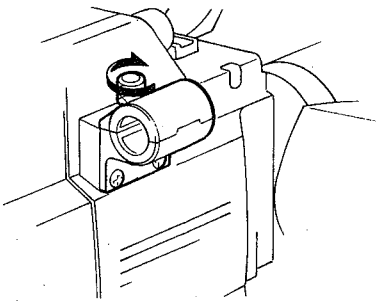
1 **Remove the two screws from the side of the camera head.**



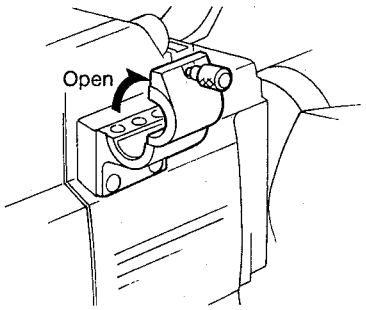
2 **Attach the CAC-1 using the screws supplied with the DXC-325/325P.**



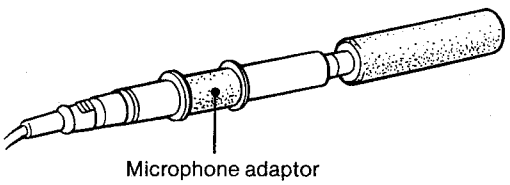
3 **Loosen the screw of the microphone holder.**



4 **Open the microphone holder.**

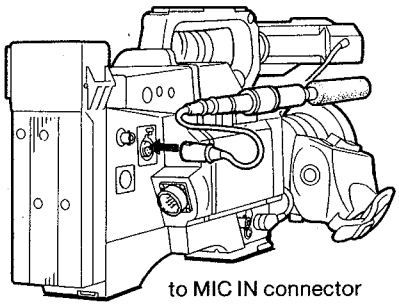


5 **Attach a microphone adaptor to the microphone when a thin microphone is used.**



When the ECM-672 is used, the microphone adaptor is not necessary.

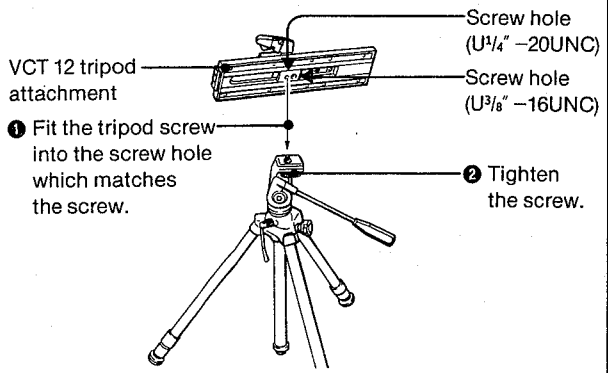
6 **Insert the microphone to the microphone holder, and tighten the screw.**



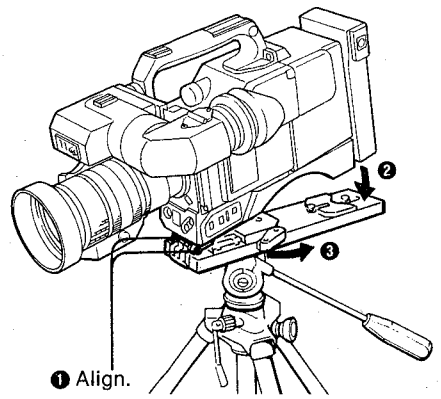
Tripod Attachment

Although the camera can be mounted on a tripod directly, use a VCT-12 tripod attachment (optional) when mounting with a large viewfinder.

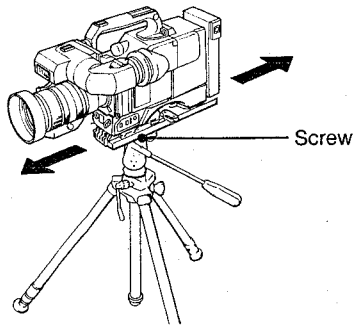
1 Attach the tripod attachment to the tripod.


Screw hole
(U1/4" –20UNC)
VCT 12 tripod attachment
Screw hole
(U3/8" –16UNC)
❶ Fit the tripod screw into the screw hole which matches the screw.
❷ Tighten the screw.

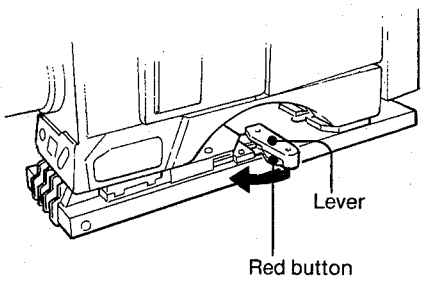
2 Attach the camera.



3 Slightly loosen the tripod screw, and move the camera to be balanced. Tighten the screw.



Camera detachment



While depressing the red button, slide the lever to the left to release the lock. Remove the camera.

Power Sources

Note on priority of power sources

The DXC-325/325P operates on any of the following three types of power sources:

(1) Power from the DC IN connector
(2) Power from the battery pack compartment
(3) Power from the VTR/CCU/CMA connector
   — Power from the VTR when connecting a portable VTR
   — Power from the CCU when connecting a CCU-M3/M3P camera control unit
   — Power from the camera adaptor when connecting a CMA-8/8CE camera adaptor

When two or three of the power sources (1) to (3) are simultaneously connected to the camera, only one of them is used according to numerical order priority, and the other power source(s) is (are) automatically cut off.

Power from the DC IN Connector

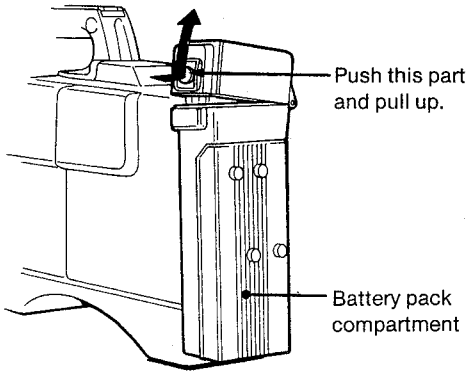
This connector is equipped for supplying power from an external DC power supply (12V DC).

Power from the Battery Pack Compartment (An NP-1A Battery Pack)

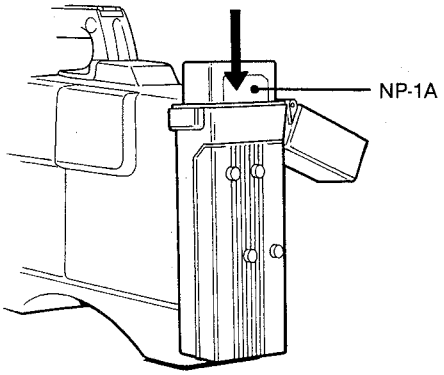
Use a fully charged NP-1A battery pack (optional) by inserting it into the battery pack compartment.

Installing an NP-1A battery pack

1 **Pull up the lid of the battery case.**



2 **Install the battery pack, and close the lid.**



Battery life

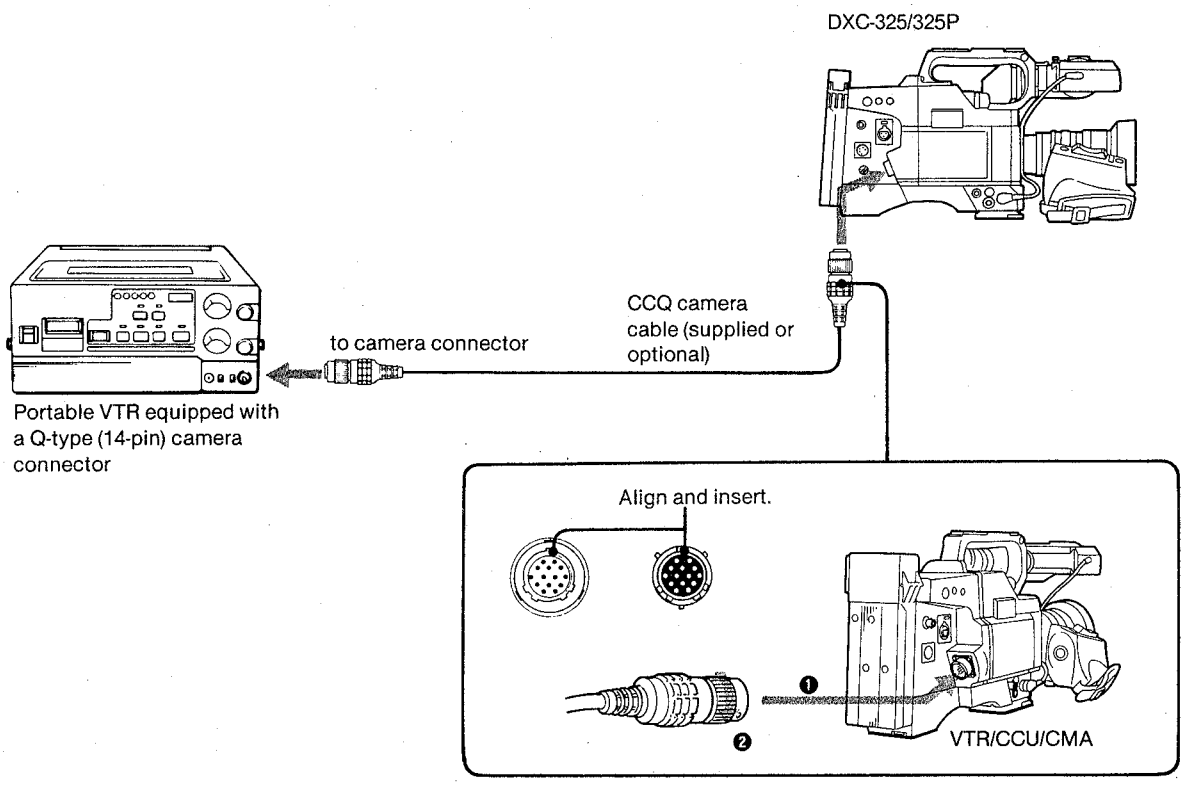
Continuous operation time
When using one fully charged NP-1A: About 120 minutes

Battery life warning
When the battery is nearly exhausted, the warning ":BATT: EMPTY?" appears on the viewfinder screen. If you continue to use the battery after the "BATT: EMPTY?" warning has appeared, the BATT indicator of the viewfinder also lights up to indicate that the battery must be replaced immediately.

Battery charging
Recharge the NP-1A battery pack before each use, using the BC-1WA battery charger. It takes about 60 minutes at the normal temperature. For details on recharging, refer to the battery charger's instruction manual.

Power from the VTR/CCU/CMA Connector

Power from a portable VTR



Notes

- When the portable VTR is operated from rechargeable battery packs, the continuous operating time of the camera and portable VTR is about 80 minutes at normal temperatures (when the VO-6800/6800PS portable videocassette recorder and two NP-1A battery packs are used). The life of the batteries installed in the portable VTR is indicated by the BATT indicator of the viewfinder. (see page 43.)
- Refer to the VTR's instruction manual for information on the power supply to the VTR.

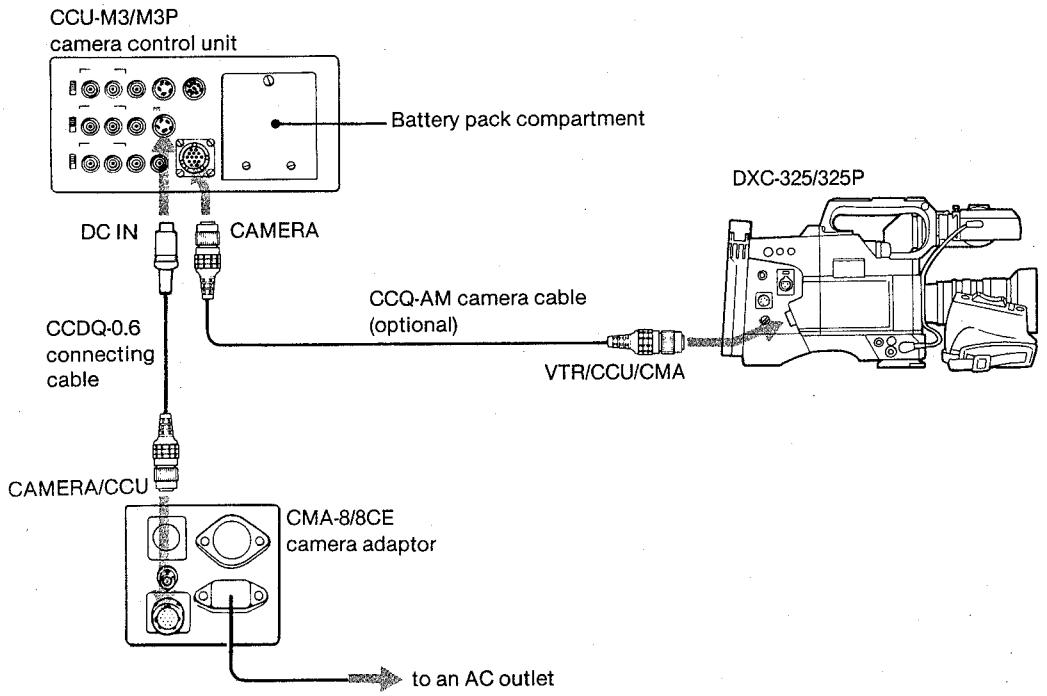
Caution

- Before operating the camera, make sure that the power supplied from the VTR to the camera is sufficient. If the power supply capacity of the VTR is not sufficient, the camera must be powered independently.
- When a portable VTR equipped with a K-type (14-pin) camera connector is used, the camera must be powered independently, because power is not supplied through the CCQK cable.

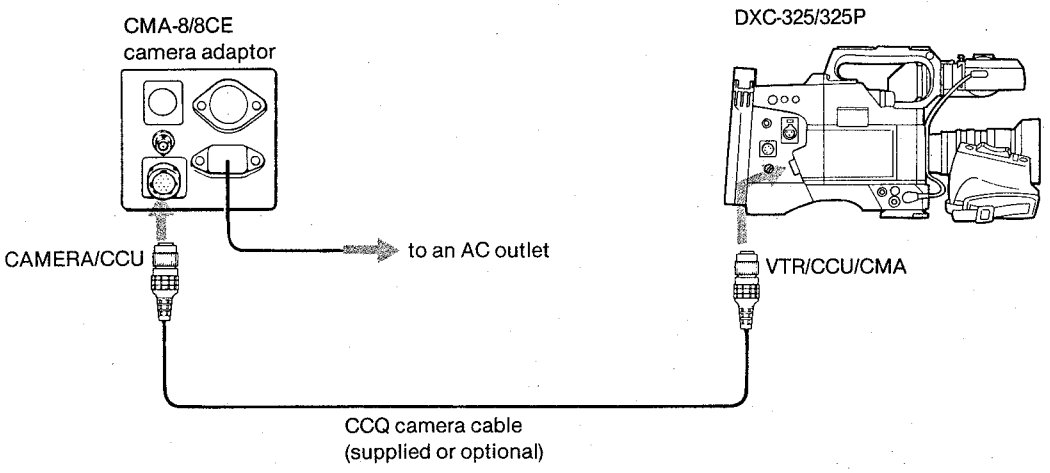
Power from a CCU-M3/M3P camera control unit

When the CCU is powered by the battery pack, the life of the battery pack installed in the CCU is indicated by the BATT indicator of the viewfinder.

For details on the power sources for the CCU, refer to the CCU's instruction manual.



Power from a camera adaptor



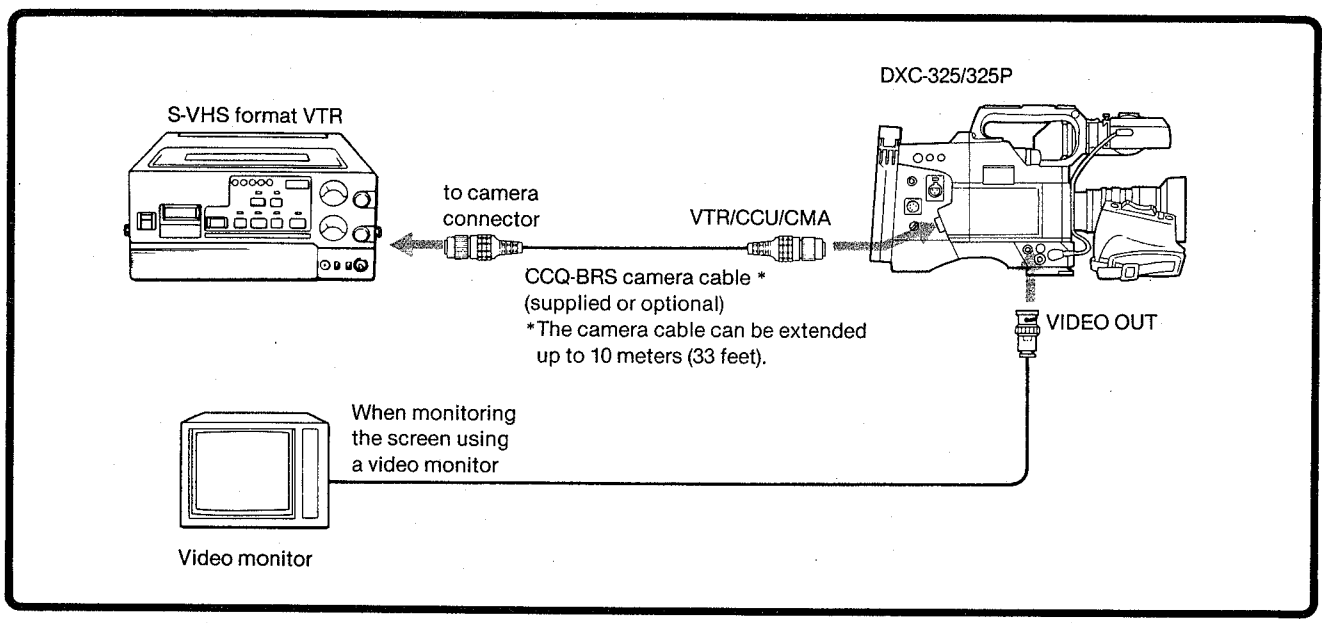
Connections

Before making connections, make sure that the power switches of the camera and other equipment are turned off.

Connection with an S-VHS Format Portable VTR

Set the OUTPUT selector on the camera adaptor to Y/C when you connect an S-VHS format portable VTR.
The video signal output to CCQ camera cable is now the Y/C separate signal.
The video signal output to the VIDEO OUT connector is still the usual composite video signal.

When using a VTR which records with a composite video signal next time, change the setting of the OUTPUT selector to VBS.

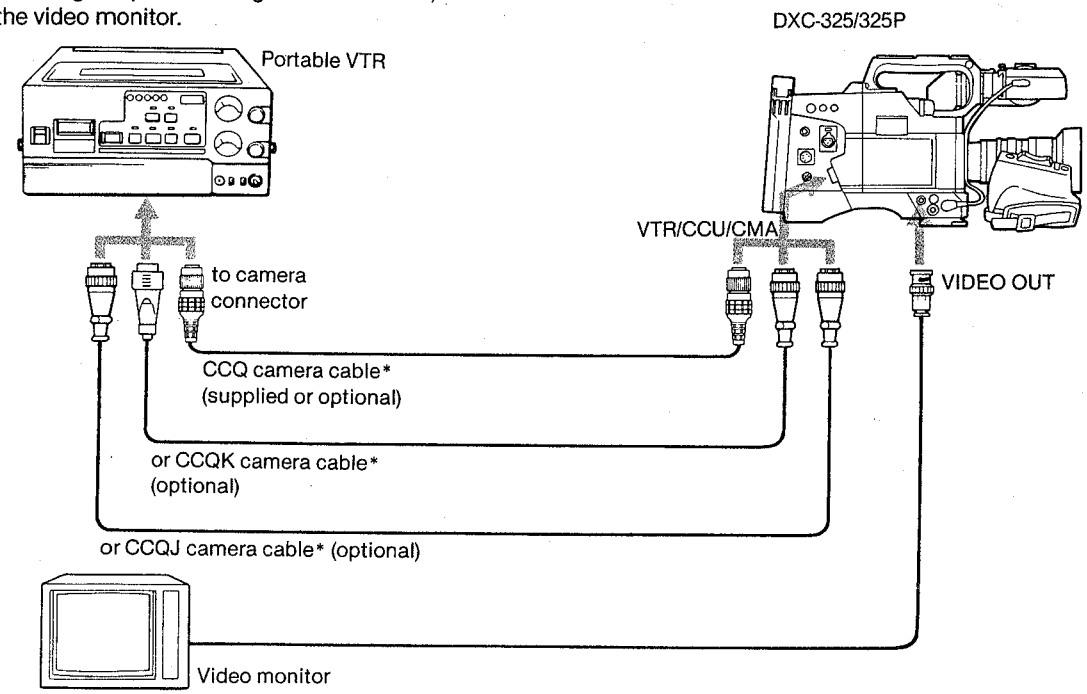


Notes

- Picture monitoring of the Y/C seperate signal is possible if the monitor is equipped with the S video input jacks. Connect the VTR and the S video input jacks of the monitor. In this case, connection between the VIDEO OUT connector of the camera and the monitor is unnecessary.
- Superimposed title characters (see page 46) do not appear on the screen when the Y/C separate signal is output through the CCQ-BRS camera cable. Connect a TGR-325 title generator (Optional) to the TITLE connector, and the characters superimposed by the TGR-325 can be seen on the viewfinder or the monitor connected to the VIDEO OUT connector of the camera.

Connection with a Portable VTR

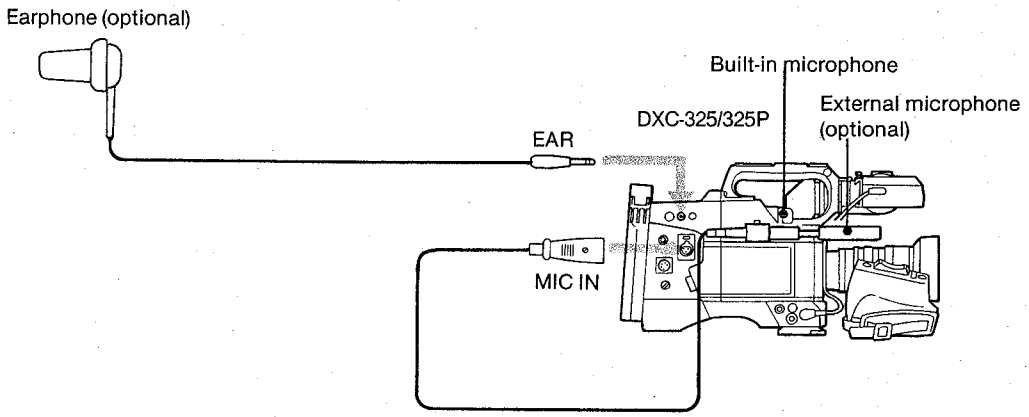
When monitoring the picture using a video monitor, connect the video monitor.



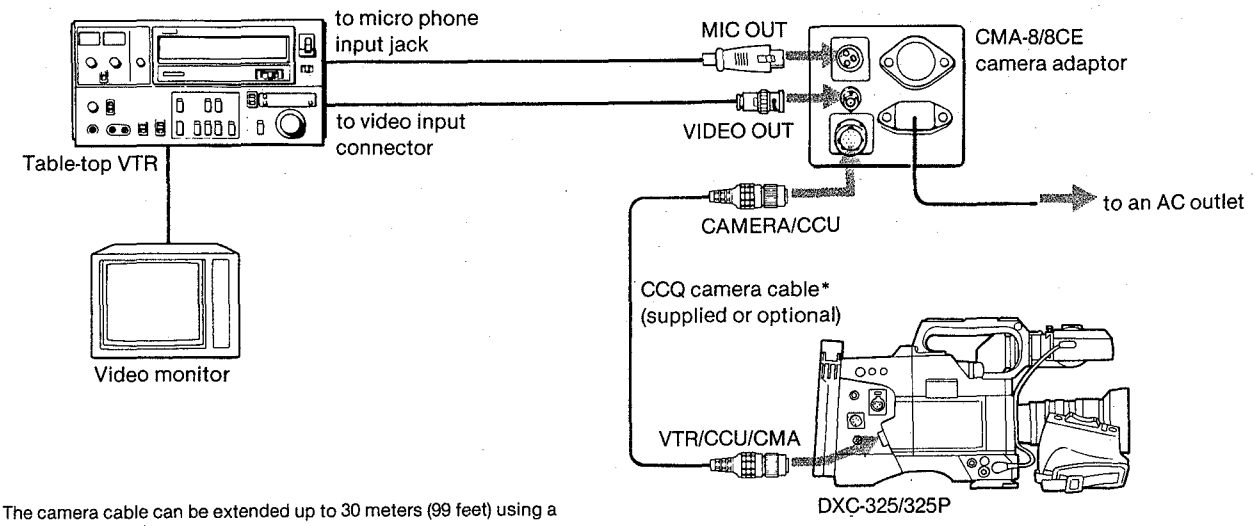
* The camera cable can be extended up to 10 meters (33 feet) using a CCQ camera cable.

Connection for simultaneous sound recording

To avoid recording noise made while handling the camera, connect an external microphone to the MIC IN connector. The built-in microphone will be automatically shut off.

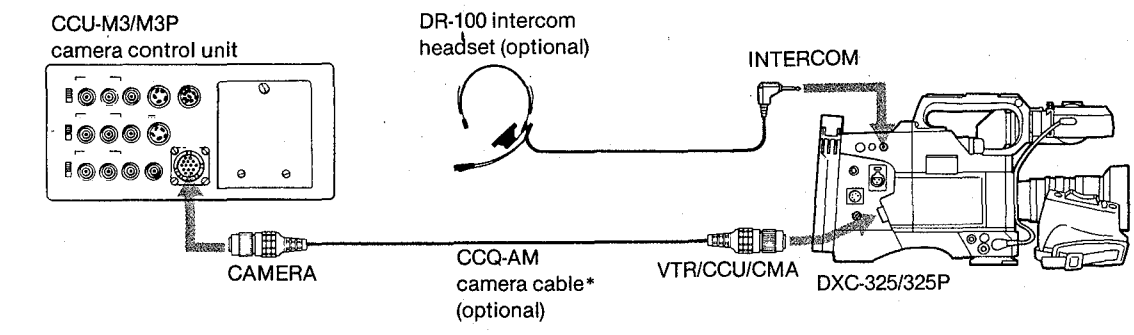


Connection with a Table-Top VTR



* The camera cable can be extended up to 30 meters (99 feet) using a CCQ camera cable.

Connection with a CCU-M3/M3P Camera Control Unit



* The camera cable can be extended up to 100 meters (330 feet) using a CCQ-AM camera cable.

Notes on operation with the CCU-M3/M3P

- When the camera is connected to the CCU-M3/M3P camera control unit, set the selectors as follows:
  — VTR selector: 1
  — OUTPUT selector: VBS
- When the camera is connected to the CCU, the following switches will not operate: GAIN selector, BARS/WB selector, H PHASE control, SC PHASE control and SC phase selector.
- The MIC IN connector of the camera cannot be used as an external microphone input.
- When the CCU's W/B BALANCE selector is set to PRESET or MANUAL, it adjusts the white balance and takes priority over the camera. If the W/B BALANCE selector is set to AUTO, the white balance can be adjusted by either the camera or the CCU.
  Automatic black balance adjustment is performed by setting the AUTO W/B BAL switch of the camera to BLK, irrespective of the position of the W/B BALANCE selector of the CCU.

Function of the Connected VTR

VTR selector	Microphone level	Connected VTR	Remote control of VTR start/stop	REC indicator		BATT alarm indication	Audio monitor (on the camera)	Picture shown on the viewfinder		Cable for connection n: cable length	Power supply from VTR to camera (See note 1.)	AC power adaptor for VTR
				REC indication	VTR alarm			During recording	During playback			
1	−60 dB (See note 2.)	VO-6800 (NTSC) VO-6800PS (PAL)	Yes	Yes	Yes	Yes	Yes	Yes Camera	Yes VTR	CCQ-nBRS	Yes	CMA-8 (NTSC) CMA-8CE (PAL)
		VO-4800 (NTSC) VO-4800PS (PAL)	Yes	Yes	Yes	Yes	Yes	Yes Camera	Yes VTR	CCQ-nBRS	Yes	AC-340B (NTSC) AC-340CE (PAL)
		BVU-50 (NTSC) BVU-50P (PAL)	Yes	Yes	Yes	Yes	Yes	Yes Camera	No	CCQ-nBRS	Yes	AC-500 (NTSC) AC-500CE (PAL)
		BVU-110 (NTSC) BVU-110P (PAL)	Yes	Yes	Yes	Yes	Yes	Yes Camera	Yes VTR	CCQ-nBRS	Yes	AC-500 (NTSC) AC-500CE (PAL)
2	−20 dB	SL-2000 (NTSC) SL-F1E (PAL)	Yes	Yes	Yes	No	Yes	Yes Camera	Yes VTR	CCQK-2	No	AC-220 (NTSC) AC-F1E (PAL)
3	−20 dB	HR-C3 (JVC, NTSC) HR-2200 (JVC, PAL)	Yes	Yes	No	No	Yes	Yes Camera	Yes VTR	CCQJ-2	No	
4	−20 dB	PV-5000 (Panasonic, NTSC) NV-9400 (Panasonic, PAL) AG-6400 (Panasonic, NTSC, PAL)	Yes	Yes	No	No	No	Yes Camera	Yes VTR	CCQJ-2	No	
		AG-7400 (Panasonic, NTSC, PAL)	Yes	Yes	No	No	Yes	Yes Camera	Yes (See note 3.)	CCQ-nBRS	No	

Notes

1. For VTRs with "No" in the column "Power Supply from VTR to Camera", the power supply from the VTR is insufficient to operate a camera. Therefore, the independent power source must be provided for the camera. If the camera is operated without being powered independently, heat will build up in the VTR or AC power adaptor, and the protective circuit will activate. Consequently, the VTR or AC power adaptor will not operate properly.
2. When the VO-6800/6800PS portable VTR is connected to the camera, the VTR's −20 dB/−60dB camera microphone input level selector is set to −60 dB.
3. A picture from a VTR can be seen only when the REST button is pressed.

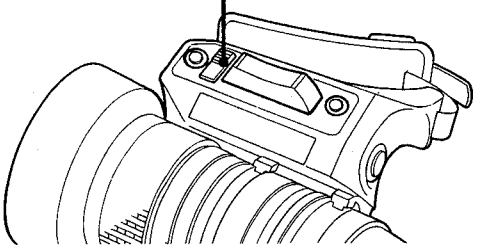
If the operating conditions of the VTR are different from those shown above, the VTR might not operate normally. If you use a VTR other than those shown above, for which the VTR selector must be set to "3" or "4, check the signal levels and other operating conditions.

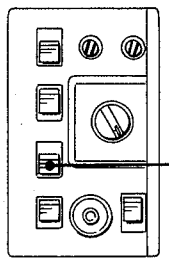
Adjustments

Preparation

Check to be sure that the connections are made correctly, and set the switches as shown.

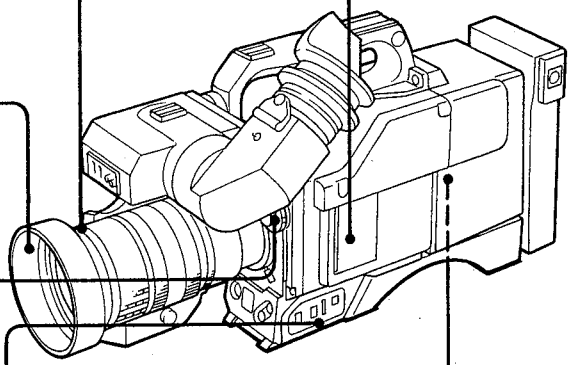
Iris selector → "A"
(See page 34.)





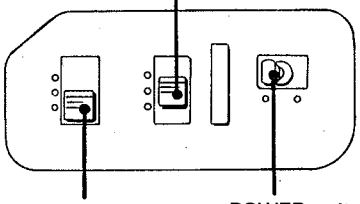
ABL switch → OFF

Remove the lens cap.



FILTER selector → appropriate position
(See page 34.)

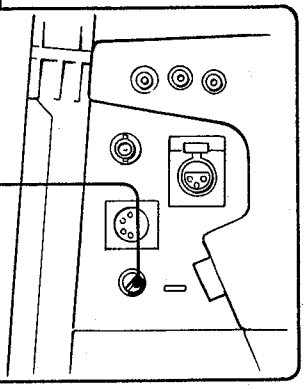
BARS/WB selector → AUTO



GAIN selector → 0 dB
(See page 39.)

POWER switch
→ ON

VTR selector
↓
appropriate position
(See page 29.)



Point the camera at the object. While zooming in or out, turn the focus ring to focus the picture.

Video Monitor Adjustment

When a color video monitor is being used to monitor a picture, adjust the color of the monitor as follows.

1 **Set the BARS/WB selector to BARS.**

2 **Adjust the color and hue controls on the monitor while viewing the color bars on the monitor screen.**

3 **Set the BARS/WB selector to AUTO.**

Filter Selection

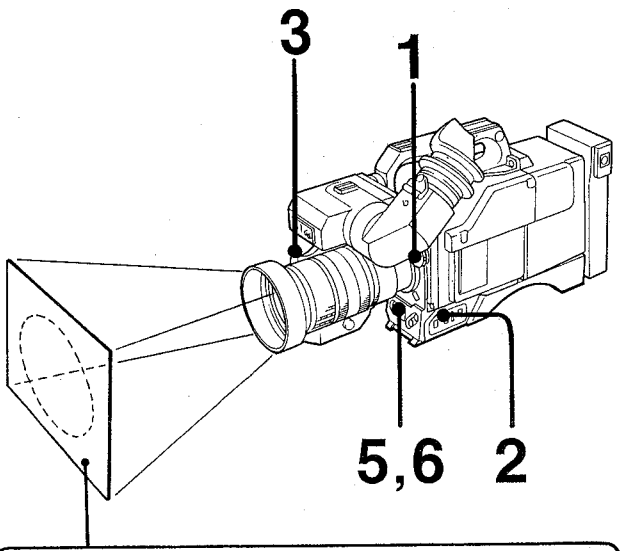
The color temperature changes according to lighting conditions. To compensate this, use the color temperature conversion filter indicated in the table below.

Filter number	Lighting conditions
1	Iodine lamp, sunrise, sunset
2	Bright outdoor
3	Cloudy, rainy

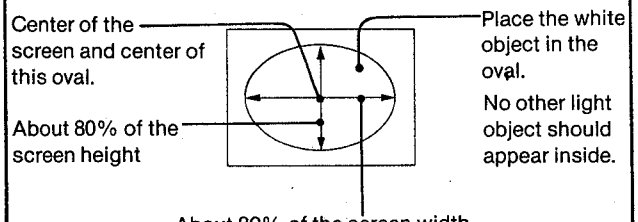
If the selected filter is not suitable for the lighting conditions, a warning such as ":LOW LIGHT" will be shown on the viewfinder screen. For details on the warning, refer to "Warning Indicators and Character Display" on page 1-27.

White Balance and Black Balance Adjustments

Proceed with the following white balance and black balance adjustments in order to obtain picture clarity and lifelike color reproduction.



The minimum white area required for adjustment is 10% of the area shown below.


Center of the screen and center of this oval.
About 80% of the screen height
Place the white object in the oval.
No other light object should appear inside.
About 80% of the screen width

1 **Set the FILTER selector properly according to the lighting conditions.**

2 **Set the BARS/WB selector to AUTO.**

3 **Zoom up on a white object using the same lighting conditions as those under which the recording will be made.**

4 **Set the lens iris selector to "A".**

5 **Press the AUTO W/B BAL switch toward BLK, and release it.**
"BLK.:OP" will appear on the viewfinder screen during the automatic black balance adjustment. After the adjustment is completed, "BLK.:OK" will be displayed for a few seconds.

6 **Press the AUTO W/B BAL switch toward WHT, and release it.**
"WHT.:OP" will appear on the viewfinder screen during the automatic white balance adjustment. After the adjustment is completed "WHT.:OK" will be displayed for a few seconds.

Note

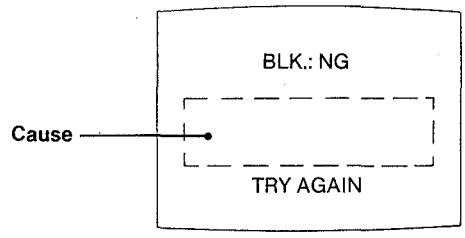
Readjustments of the white balance and black balance are necessary under the following conditions.

White balance:
- Each time the lighting conditions are changed
- If the ":MEMORY NG" is displayed on the viewfinder screen, indicating the previous white balance value is no longer retained in the memory.

Black balance:
If the ":MEMORY NG" is displayed on the viewfinder screen, indicating that the previous black balance value is no longer retained in the memory.

If the automatic black balance adjustment function does not work normally:

The following indications will appear on the viewfinder screen.



:LENS CLOSE?

Cause: The lens iris did not close automatically during black balance adjustment.
Check: • The lens function
• The lens connection

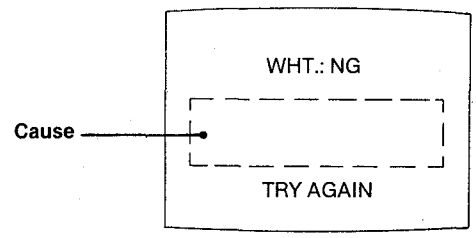
:CB SW MISS TOUCH?

Cause: The BARS/WB selector is set to BARS during the black balance adjustment.
Check: The BARS/WB selector. Is it set to AUTO?

Try to make the black balance adjustment again after eliminating the problems described above.

If the automatic white balance adjustment function does not work normally:

The following indications will appear on the viewfinder screen.



:C. TEMP.LOW CHG.FILTER or **:C.TEMP.HI CHG.FILTER**

Cause: An inappropriate color temperature conversion filter was used.
Check: The filter type

:????

Cause: • A white object was not used to make the adjustment.
• The adjustment was made with a very bright object inside the minimum white area required for white balance adjustment.
Check: The white pattern or object, and refer to Step 3 of the "White Balance and Black Balance *Adjustments*".

:LOW LIGHT

Cause: The light is insufficient.
Check: • The lighting. If necessary, increase it.
• The video output level. If necessary, raise it using the GAIN selector.

Try to make the white balance adjustment again after eliminating the problems described above.

Memorized white balance and black balance values
In the DXC-325/325P, a built-in memory stores the adjusted white balance and black balance values. The memorized values will be retained for about 12 hours after the power is turned off without any further power supply to the camera or until the adjustments are made once again. If the memorized values are erased, ":MEMORY NG" will be displayed on the viewfinder screen next time the camera power is turned on. If this happens, adjust the white balance and black balance.

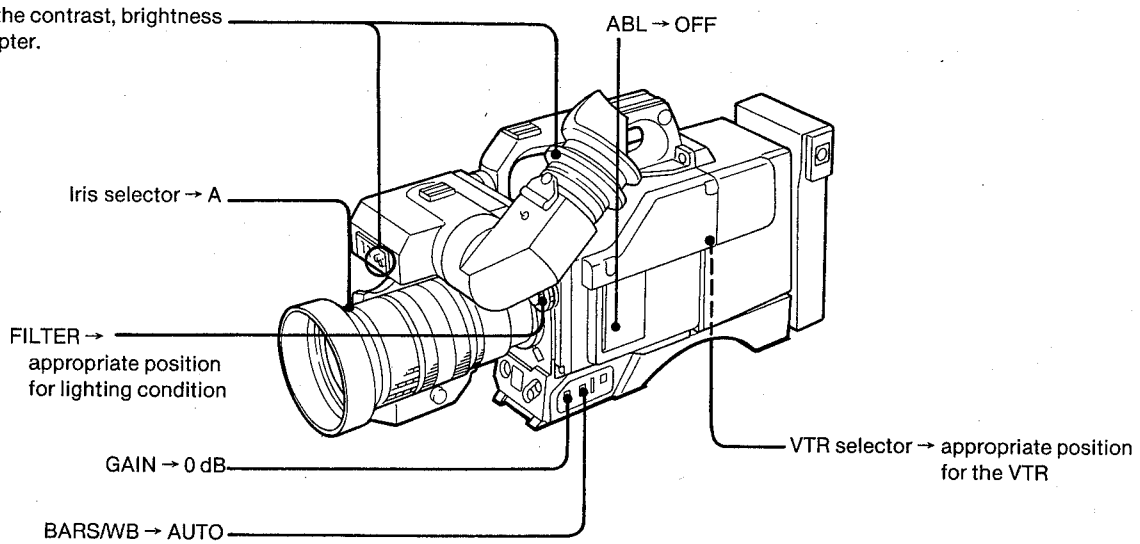
To start recording immediately without white balance adjustment
Set the BARS/WB selector to 3200 K to obtain the white balance value preset at the factory.

Black setting
When the AUTO W/B BAL switch is set to BLK, the black level drift (with respect to the reference black level) of each channel (R, G, B) is automatically adjusted, together with the black balance.

Operation

Preparation

Before operation, set the switches as follows.


Adjust the contrast, brightness and diopter.
ABL → OFF
Iris selector → A
FILTER → appropriate position for lighting condition
GAIN → 0 dB
BARS/WB → AUTO
VTR selector → appropriate position for the VTR

Recording with a Portable VTR (connected with a CCQ, CCQK or CCQJ camera cable)

1 **Turn the camera and the connected equipment on.**

2 **Adjust the black balance and white balance.** For details, refer to "White Balance and Black Balance Adjustments" on page 1-20.

3 **Point the camera at an object and adjust the lens.**
—Iris
—Zoom
—Focus

4 **To start recording,** press the VTR START/RETURN VIDEO button on the camera or the VTR button on the lens. The REC/TALLY indicator in the viewfinder will light during recording.

To stop recording, press the VTR START/RETURN VIDEO button or the VTR button again.

Note

For a brief period after the camera has been turned on, the BATT indicator of the viewfinder may light and random characters may be displayed on the viewfinder screen. (This is not a malfunction.)

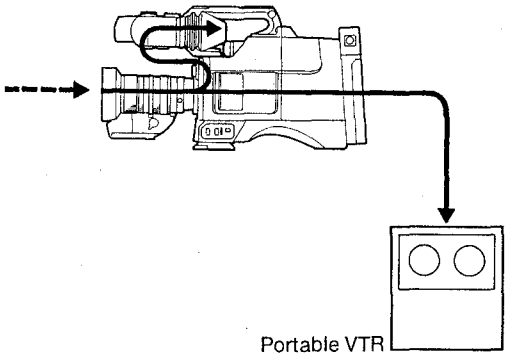
Monitoring the sound

The sound can be monitored during both recording and playback through an earphone connected to the camera's EAR jack.

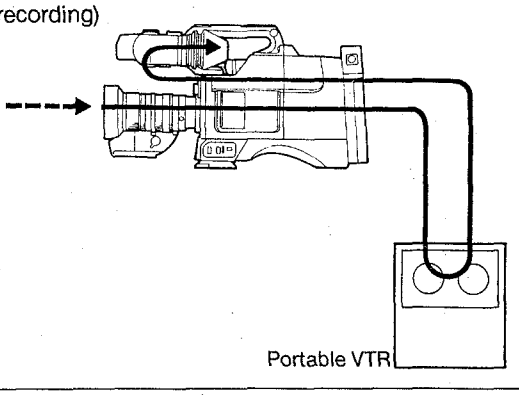
Monitoring the picture

The following three types of pictures can be seen on the viewfinder screen when the camera and the VTR are connected with the CCQ camera cable. (For details on the pictures which can be shown on the viewfinder screen, see page 1-17.)

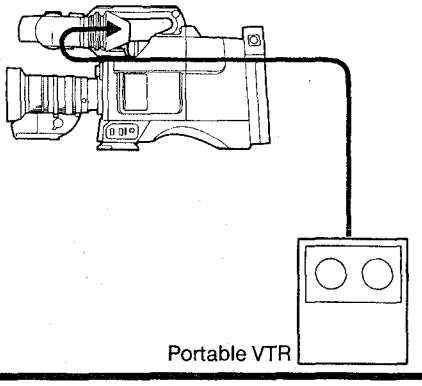
Picture picked up by the camera (during recording)



E-E mode picture from the VTR (return video) when the RET button on the lens is pressed (during recording)



Playback picture (during playback)



Note

While the playback picture from the VTR is displayed on the viewfinder screen, a part of the camera's video signals, such as a sync signal, may be mixed with the playback picture so that streaks of noise roll vertically or horizontally.

E-E (Electric-to-Electric) mode

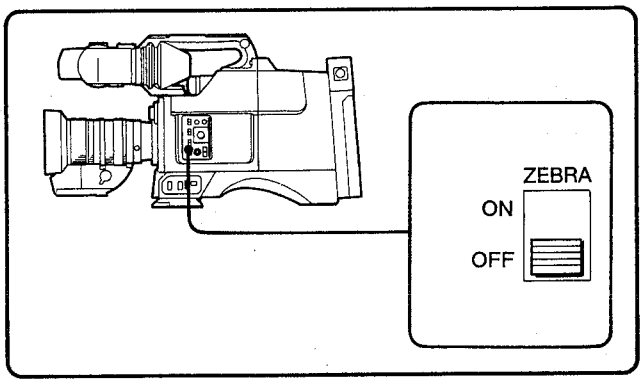
The input video signal to the VTR passes through the amplifier in the VTR and output from the video output connector without passing the video recording head and tape. The input signal to the VTR can be checked in this mode.

Output Level Adjustment

If a clear picture cannot be obtained because of insufficient lighting, set the GAIN selector to the appropriate position. Normally set the GAIN selector to "0".
The video output level can be raised by 9 dB by setting the GAIN selector to "9" and by 18 dB by setting the selector to "18".

Checking the Video Level

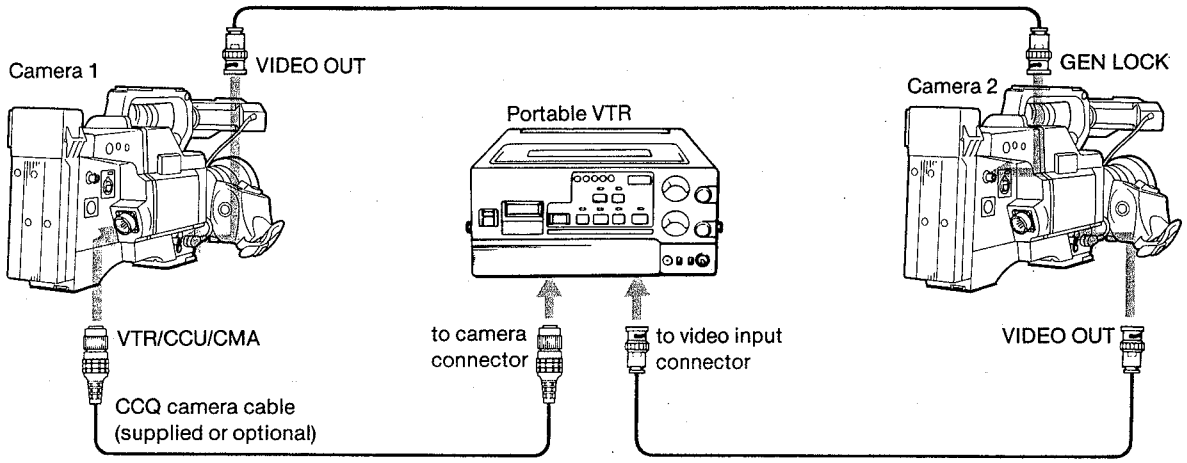
When the ZEBRA switch is set to ON, a zebra pattern will appear on the part of the viewfinder screen when the video output level of the picture is 70 to 80 IRE (for NTSC) or 490 to 560 mV (for PAL). You can use this zebra pattern as a reference when adjusting the iris manually. Adjust the iris so that the zebra pattern appears over the subject being shot (for example, the face of a back-lit person).
If it is not necessary to use the zebra pattern to adjust the iris, set the ZEBRA switch to OFF.



Use of the GEN LOCK Connector

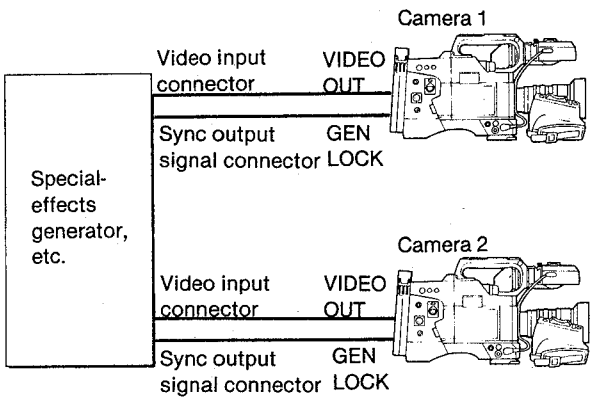
When the BS or VBS signal is connected to the GEN LOCK connector, the camera synchronizes with the connected signal. Use this connector when two or more cameras are used without a CCU.

Example 1



Camera 2 is synchronized with Camera 1.

Example 2



Camera 1 and Camera 2 are synchronized with a special-effects generator.

Adjustment of the picture tone for two or more cameras

When two or more cameras are used simultaneously in connection with a special-effects generator, etc., supply each camera with the same reference signal, and adjust each camera to obtain the same picture tone. Adjust the SC (subcarrier) phase and the H (horizontal) phase following the procedures described below.

Subcarrier phase adjustment

Adjust the subcarrier phase roughly with the SC phase selector, and make fine adjustment using the SC PHASE control. Use a vectorscope to make the adjustment easily.

Horizontal phase adjustment

Adjust the horizontal phase with the H PHASE control. Use a waveform monitor or an oscilloscope to make the adjustment easily.

Operation

Recording with a Table-Top VTR

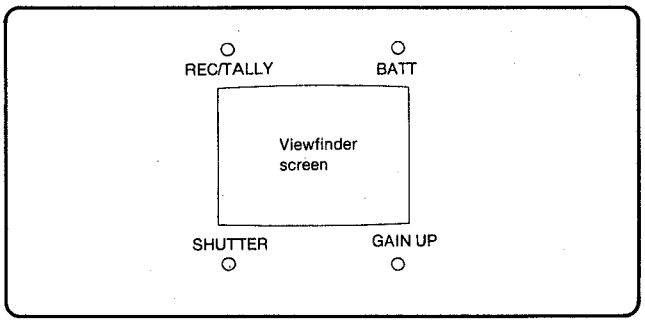
The operating procedure is almost the same as when recording with a portable VTR except for the following:

- The VTR START/RETURN VIDEO button on the camera and the VTR button on the lens do not function. Recording must be started and stopped with the function buttons on the VTR.
- The REC/TALLY indicator in the viewfinder does not function.
- The E-E mode picture (return video) and the playback picture cannot be monitored on the viewfinder screen.

Warning Indicators and Character Display

Warning Indicators on the Viewfinder

The following indications show the status of the connected camera, VTR or CCU.
(Some VTRs might have no indication function by blinking or by lighting up.)



Indicator	When operate	Blinks	Lights up
REC/ TALLY	While recording, using a VTR connected with a CCQ cable	Until the VTR is put on the standby mode	During recording
	During use of a VTR (equipped with a warning system), which is connected with a CCQ or a CCQK cable	While the VTR is malfunctioning	—
	During use of the CCU-M3/M3P	—	When a tally signal is transmitted from a video switcher, etc.
BATT	• When a camera powered by a built-in NP- 1A is used	—	The battery power is weak.
	• When a VTR is connected to the camera	The battery power is weak.	When a connected equipment is continuously operated after blinking
	• When a CCU is connected to the camera*		
SHUTTER	Any time	—	When the SHUTTER ON/OFF switch of the camera is set to ON.
GAIN UP	Any time	—	When the GAIN selector is set to 9 dB or 18 dB

*The indicator's blinking speed denotes the following:
Slow: The battery is weak.
Fast: The CCU's switches and controls are being used.

Warning Indications on the Character Display

The following indications appear on the viewfinder screen.

:LOW LIGHT

Meaning: The lighting is insufficient.
Check: The lighting. Increase it, if necessary.
The iris. Open the iris manually or activate the auto iris function.
The filter. Select an appropriate filter.
The GAIN selector. Set it to 9 dB or 18 dB.

It is possible to switch the "LOW LIGHT" indication on or off.
On: Press the UP/ON button when the character display is on the "Operational Status of the Camera" mode.
Off: Press the DOWN/OFF button when the character display is on the "Operational Status of the Camera" mode. The indication does not appear on the viewfinder screen even if the lighting is insufficient.

:MEMORY NG

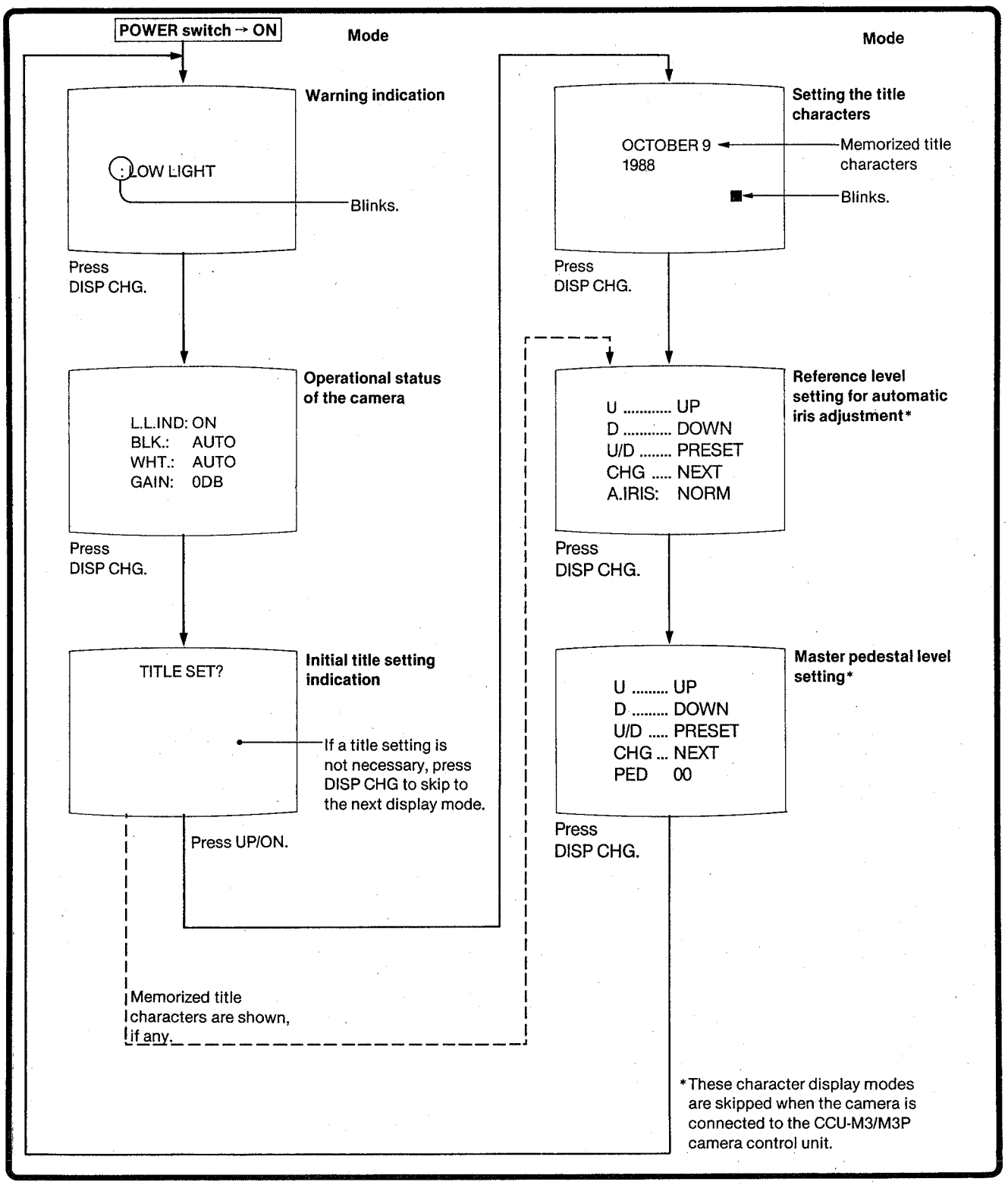
Meaning: The white balance and black balance adjusted values are no longer retained in the memory.
Check: The white balance and black balance values. Reset them.

:BATT :EMPTY?

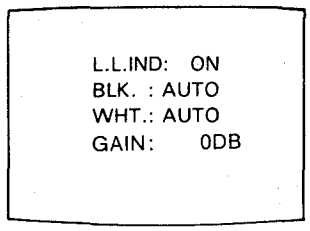
Meaning: The input voltage to the camera is less than about 11.0 V.
Check: The battery. Replace it with a fully charged one.
If you continue recording with a weak battery, the quality of the recording will deteriorate.

Character Display on the Viewfinder

The following chart shows the character display mode sequence each time the DISP CHG is pressed.



Operational status of the camera



L.L. IND (Setting the "LOW LIGHT" indication)

ON: "LOW LIGHT" is displayed.
OFF: "LOW LIGHT" is not displayed.

BLK. (Black balance adjustment mode)

AUTO: For automatic adjustment
MANUAL: For manual adjustment using the CCU-M3/M3P camera control unit

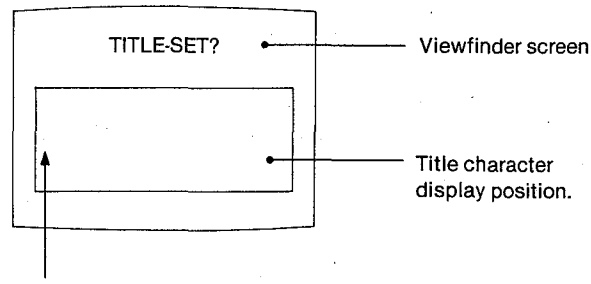
WHT. (White balance adjustment mode)

AUTO: For automatic adjustment
PRESET: For the factory preset value
MANUAL: For manual adjustment using the CCU-M3/M3P

GAIN (Setting the video output level)

0 dB, 9 dB or 18 dB.

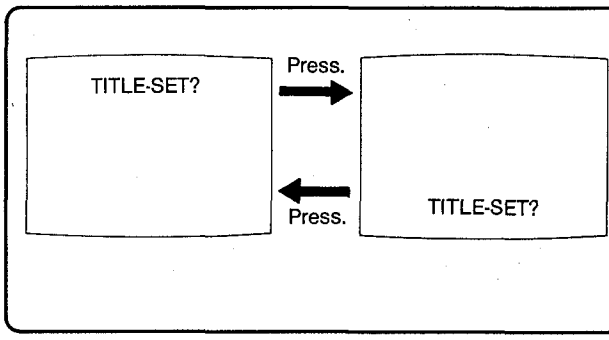
Initial title setting indication


TITLE-SET?
Viewfinder screen
Title character display position.
If any characters are stored in the memory, they are displayed here.

Perform the following procedures if necessary.

To clear all the memorized title characters:
Press the UP/ON button and the DOWN/OFF buttons simultaneously.

To change the character display position:
Press the DOWN/OFF button.



Note

When the camera is used with a VO-6800/6800PS portable VTR, use only the lower character display area, because the VTR tape remaining time is shown in the upper character display area.

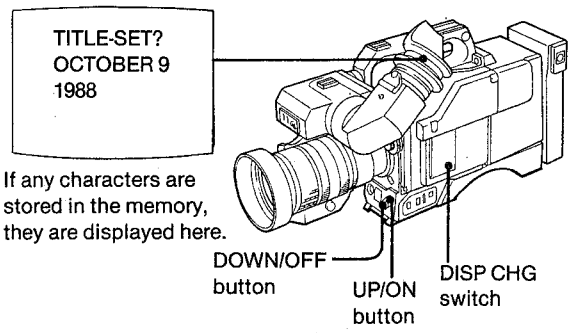
Warning Indicators and Character Display

Setting the title characters

This camera has a superimposition function which allows the simultaneous showing of the picture shot by the camera and the characters by the built-in character generator on the same screen. If a recording VTR or a monitor is connected to the camera, the superimposed picture can be recorded on the VTR or monitored on the monitor screen. Use the DISP CHG switch, UP/ON button, and DOWN/OFF button to set title characters.

Preparation

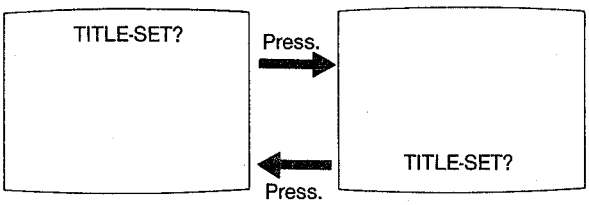
1 **Press the DISP CHG switch until the following indication appears on the viewfinder screen.**



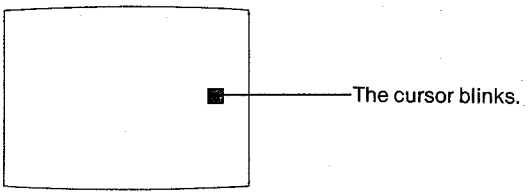
Perform the following procedures if necessary when the indications above are shown on the viewfinder screen.

To clear all the memorized title characters:
Press the UP/ON button and DOWN/OFF button simultaneously.

To change the position of the title characters:
Press the DOWN/OFF button.

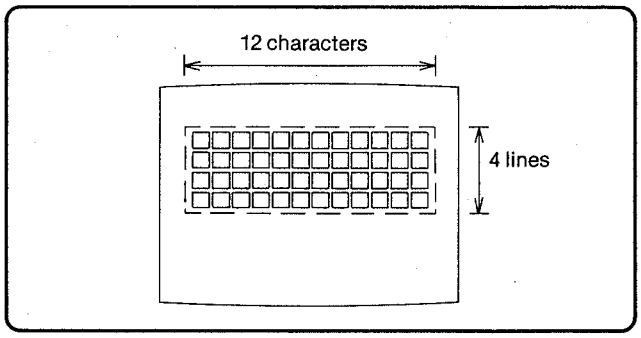


2 **Press the UP/ON button to set title characters.**



Setting procedures

Set title characters one by one using the UP/ON button and DOWN/OFF button. Up to 12 characters can be displayed on one line, and up to 4 lines can be displayed.

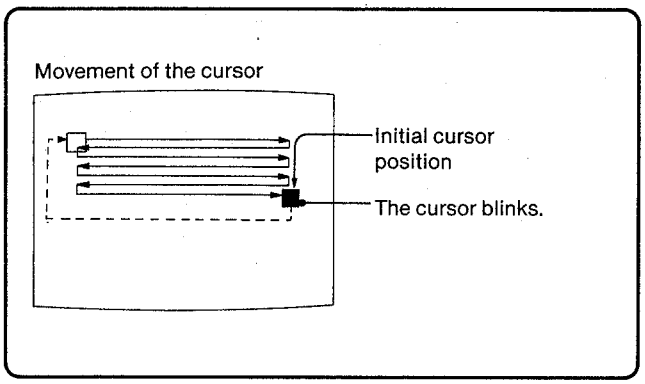


Selection of letters
Repeat pressing the UP/ON button until the desired character appears inside the cursor.
Every time the UP/ON button is pressed, the characters change in the following order.

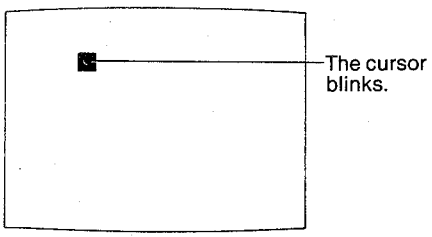
Order of scanning	Punctuation display
→ A B C D E F G H I J K L M . ■ → N O P Q R S T U V W X Y Z ? ■ → 0 1 2 3 4 5 6 7 8 9 : . - / ■ Goes back to "A".	Point: "." Space: "■" Question mark: "?" Colon: ":" Period: "." Hyphen: "-" Slash: "/"

To change the characters in reverse alphabetical order:
Press the DOWN/OFF button with the UP/ON button pressed.

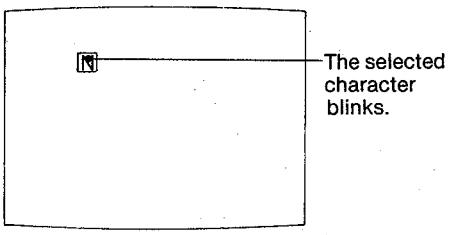
Moving the cursor
The cursor can be moved to the desired position by repeating the DOWN/OFF button. After the desired character appears, press the DOWN/OFF button, and the cursor moves one space to the right.



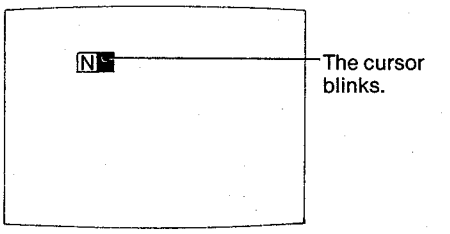
1 **Move the cursor to the desired position by pressing the DOWN/OFF button.**



2 **Select a character by pressing the UP/ON button.**



3 **Press the DOWN/OFF button to set the selected character, and the cursor moves one space to the right.**



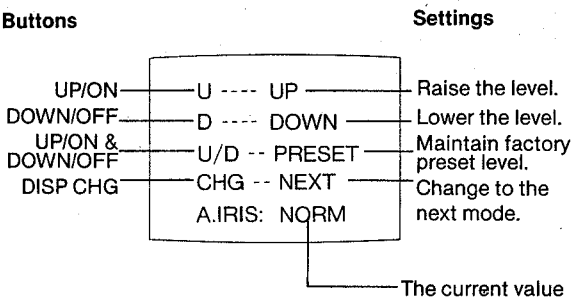
Set the title characters by repeating Step 1 through 3 shown above.

Notes

- The AUTO W/B BALANCE switch can also be used for character setting instead of the UP/ON and DOWN/OFF buttons. To set the character position, set the switch to BLK (same function as the DOWN/OFF button), and to set the character, set the switch to WHT (same function as the UP/ON button).
- To replace a character which has been set with a new one, return the cursor to the character's position, select the desired character with the UP/ON button, and press the DOWN/OFF button.
  The characters must be changed one by one as it is described in this section.

Memory of the title characters
The characters and their displayed positions are stored in the memory (about 12 hours) after the character display mode is cancelled or after the power is turned off.

Setting the reference level for automatic iris adjustment



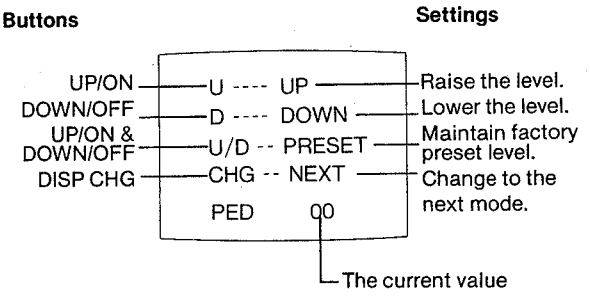
Purpose
To adjust the video level of a back-lit subject so that it is not too dark.

Adjustable range
From about −1.0 to + 1.0 F stop in about 0.5 increments.

Operation
To raise the level: Press the UP/ON button.
To lower the level: Press the DOWN/OFF button.
To reset to the normal level: Press the UP/ON and DOWN/OFF buttons simultaneously.

Maintenance of the adjusted value
The adjusted iris value will be retained in the memory until the power is turned off. The next time the camera power is turned on, the iris value will return to the factory preset level.

Setting the master pedestal level



Purpose
Adjust to obtain a well contrasted picture while shooting outdoors.

Adjustable range
From about −30% to +31% of the reference level (0.7 V as 100%) in about 1% increments.

Operation
To raise the level: Press the UP/ON button. (If this button is pressed when the master pedestal level is + 31%, "MAX" is displayed.)
To lower the level: Press the DOWN/OFF button. (If this button is pressed when the level is −30%, "MIN" is displayed.)
To reset to "00" (factory preset value): Press the UP/ON and the DOWN/OFF buttons simultaneously.

Maintenance of the adjusted value
The master pedestal level is retained in the memory for about 12 hours after the power is turned off.

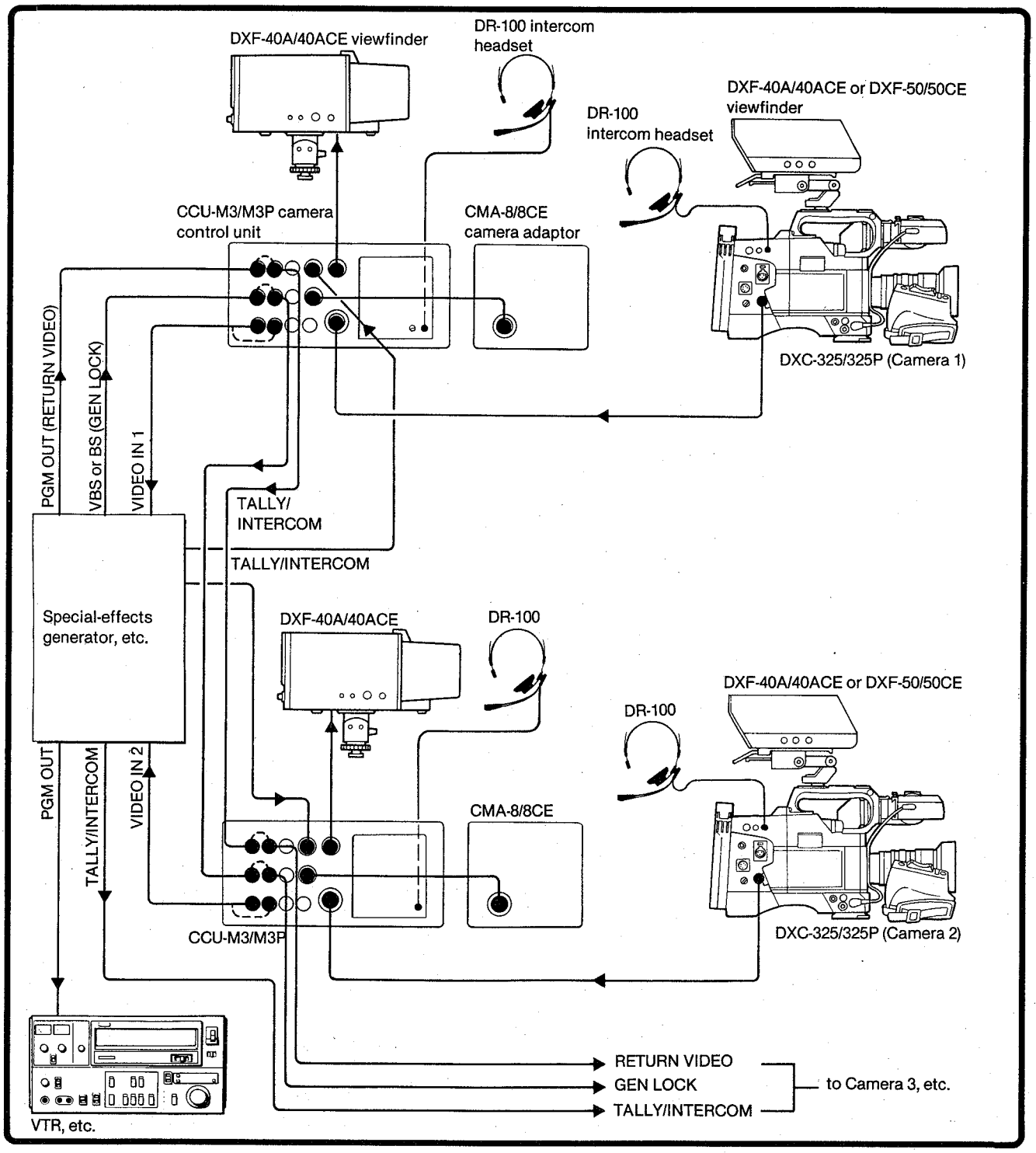
Notes

- If the pedestal level set by the UP/ON and DOWN/OFF buttons is to be monitored on a waveform monitor, set the ABL switch to OFF. If the ABL switch is set to ON, the correct waveform cannot be monitored.
- When a CCU-M3/M3P camera control unit is connected to the camera, the auto iris reference level setting mode and the master pedestal level setting mode cannot be controlled by the camera because the CCU iris and the master pedestal values take priority over the camera settings.
- The CCU master pedestal level setting is stored in the camera's memory for about 12 hours after the CCU is disconnected from the camera.

Studio Use

When using more than two cameras simultaneously in a video studio, a special-effects generator, such as the Sony SEG-2000A/2000AP, is necessary for wiping and switching, and a CCU-M3/M3P camera control unit for matching all the camera's picture quality and color.

System Example



Hints for Better Shooting

Understanding Light and Color

Brightness levels

The single greatest influence on picture quality is the brightness level. Using the following chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

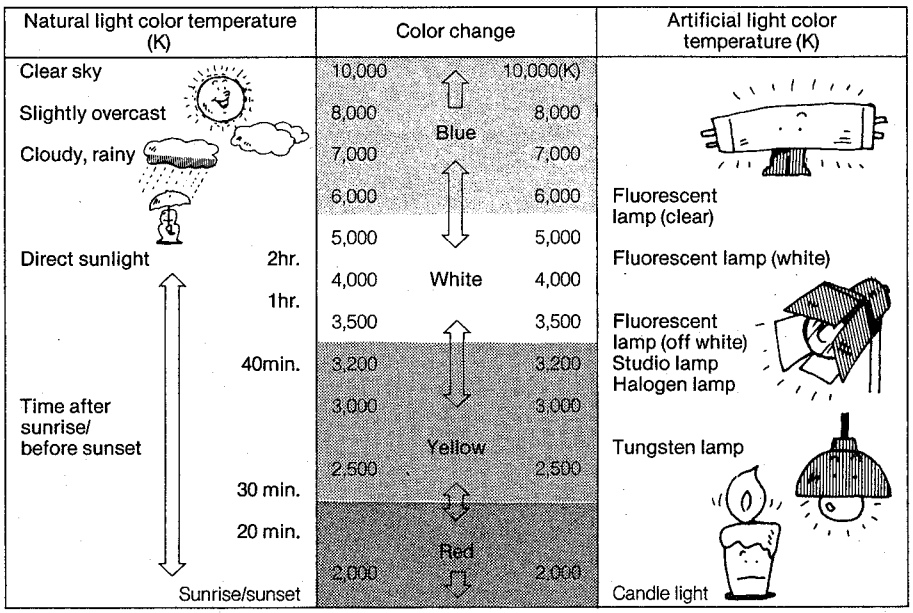
When to use an ND filter
Exceptionally bright scenes such as sunny days at the beach in summer or on snow fields in winter will look "washed out" when recorded. To make these scenes recorded naturally, an ND filter (set the FILTER selector to the 2 position) is required.

Unit: lux	
	Snow-covered mountains Snow fields Sandy beach, clear day in summer
100,000	Clear day, mid-day (100,000) Clear day, mid-afternoon (35,000) Overcast day, mid-day (32,000)
10,000	
	Overcast day, one hour after sunrise (2,000)
1,000	Office lit by fluorescent lamps, near window (1,000) Clear day, one hour before sunset (1,000)
500	Department store counter (500 ~ 700) Station wicket (650) Office lit by fluorescent lamps (400 ~ 500) Room lit by two 30 W fluorescent lamps (300)
300	Subway station platform (300)
	Arcade at night (150 ~ 200)
100	
	Theater lobby (15 ~ 35) Candle light (10 ~ 15)
10	

Color temperature—how it effects white balance adjustment

If the temperature of an object continues to increase, it will eventually begin giving off light. At this time, there is a fixed relationship between the object's temperature and its "light color." The temperature of the object radiating the light is expressed in absolute temperature (K).

This is also known as the color temperature, which in turn stands for "light color." As color temperature increases, the light color changes from red to yellow to white to blue.



Basic Camerawork

Getting stable pictures—starts with a correct stance

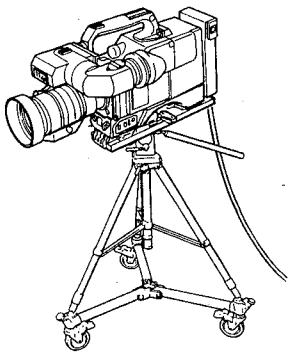
For hand-held shots, shooting position is the key

Using three basic positions as a reference, practice shooting positions until you find the stance which provides the easiest shooting and best results.

- When kneeling, placing one knee on the ground provides the best stability.
- Place the eye firmly against the viewfinder eyecup.
- For hand-held shots, put the camera on your shoulder and assume a comfortable, stable position. Make sure the camera does not move.
- Relax your shoulders.
- Put your right elbow firmly against your side to help stabilize the camera.
- If you are going to move the unit while recording, keep both eyes open as much as possible.
- Stand firmly with your feet comfortably apart. Leaning against something firm such as a wall or tree will also provide extra stability.

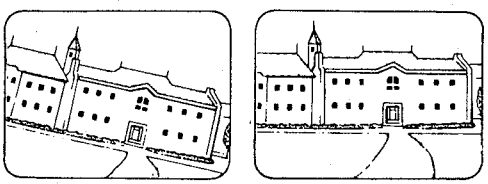
Use a tripod or monopod if possible

Use a sturdy one.
If a tripod is not available, try placing the camera on a tabletop, wall, or any other flat surface of suitable height.



Keeping the horizontal plane level

Even if camera work is smooth and stable, shots can be tilted or off axis horizontally.



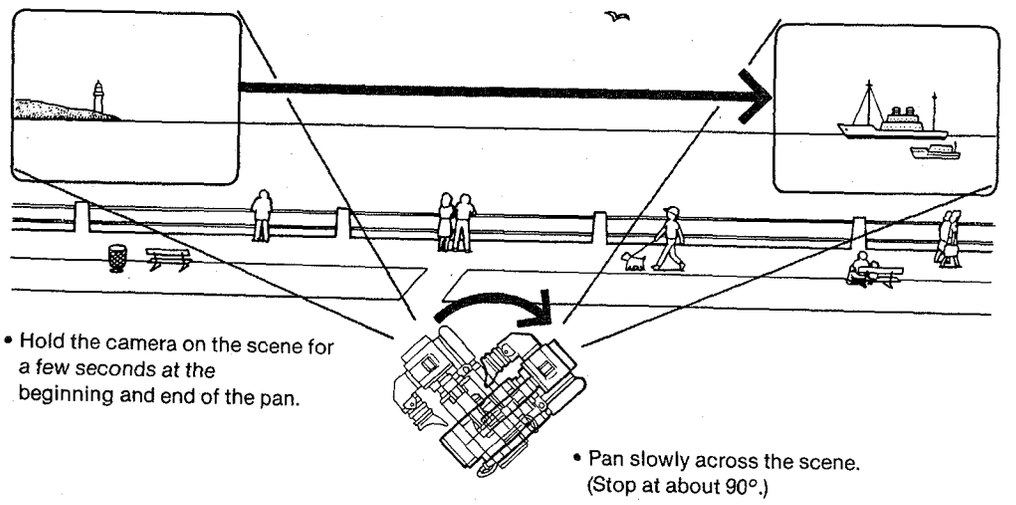
The horizontal plane can be easily determined by using the viewfinder frame as a reference.

Three frequently used shots

These three types of shots will bring additional action and movement to your scenes when properly used.
For greatest effect, it is advisable that they not be overused.

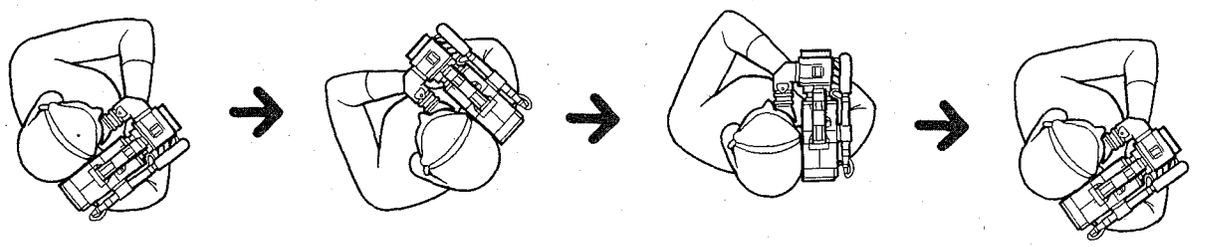
Panning —Moving the camera horizontally

For emphasizing the grandeur of a scene, and for including all of the scenery in a single continuous shot.


• Hold the camera on the scene for a few seconds at the beginning and end of the pan.
• Pan slowly across the scene. (Stop at about 90°.)

For professional-looking pans

1 First, stand so that you face in the direction where the pan will end.
2 Without moving your feet, rotate your upper body so that your camera faces the direction where the scene will begin.
3 Start shooting. Rotate your body slowly to the point where the pan will stop.



The best panning speed is one that will allow you to explain the scene during playback.

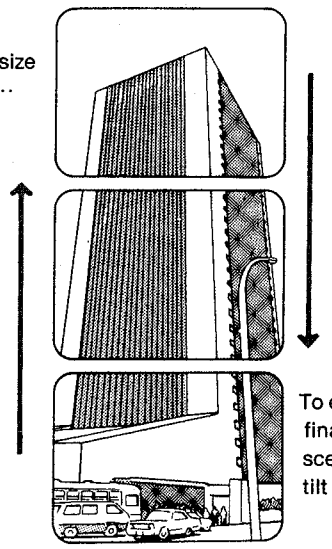
Repeated pans of the same scene should be avoided.

If you can hold your breath during panning and zooming, camera shake can be minimized, and you can concentrate more easily on the scene.

Tilting —moving the camera vertically

Tilting shots with the camera should be slightly faster than pans.

To emphasize height... ··· tilt up.



To emphasize the final part of the scene.. tilt down.

Zooming —changing the size of the subject

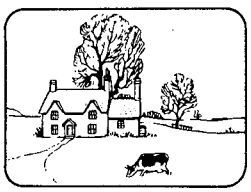
Because telephoto shots make camera shake more noticeable, the camera should be as stable as possible.

To draw attention to something specific... zoom in.

To end the shot by making the circumstances surrounding the scene understood... zoom out.

Sizing the scene-mixing long, medium and close-up shots

Continuous use of long shots or close-ups will give your productions a monotonous "flat" impression. To avoid this, it is important to consider exactly what it is that you wish to "say" with every shot. Indeed, it is possible to change the impression that any subject makes merely by changing the way it's shot.

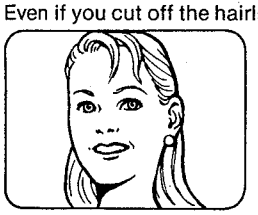


You don't have to change the subject to alter the scene-you can achieve a different effect by changing the size of the subject itself within the scene.

Framing people

Basic shots for properly framing people are shown below.
Experience has shown that shots that frame people differently than this do not have as pleasant an effect.

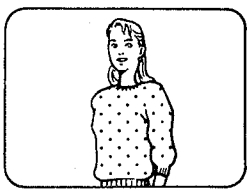
Face shot
Even if you cut off the hairline, don't cut off the chin.



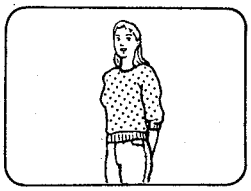
When shooting a profile, leave the space in front of the face to create a "sight line."

Bust shot—
Chest and above

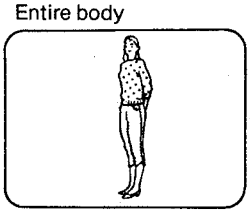
Waist shot—
Upper hips and above



Knee shot—
Knees and above



Full shot—
Entire body



Cutting

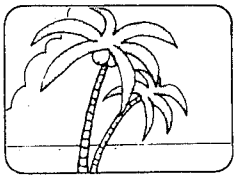
Scene length

—not too long, not too short
While there's no hard-and-fast rule, it is generally advisable to make each scene 6—7 seconds in length for easier viewing.
A succession of short scenes can tire the viewer, while long, single scenes can become boring.

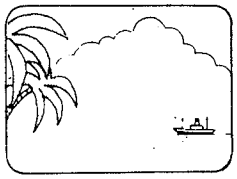
Cutting according to the narration
Cut the scene when the narration is finished.

Cutting according to the subject

Close-ups shorter.

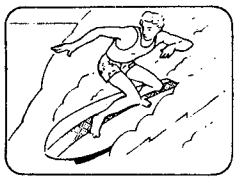


Make long shots longer.

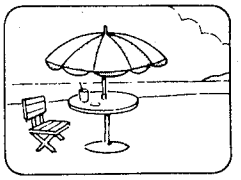


Because long shots have more to see in them than close-ups, show them longer so the viewer may understand what's there.

Make interesting shots and shots in which the subject is constantly moving longer.



Make static shots shorter.



Shoot as if you were watching the playback.
That is, it's helpful to occasionally imagine your commentary of the scene even as you're shooting it!

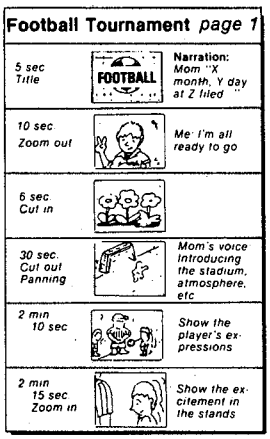
For more effective production

In video, organization is the key
To make a first-class production, it is important to decide the contents and shooting sequence in advance. The first step is to sketch out a simple outline of the actual production based on the time-tested "five W's of journalism" (who, what, where, when, why, how). This will allow you to efficiently and effectively record the many exciting events.

Write a script of what you want to record

After the theme has been decided, think about the progression of the scenes and write down the major points of the "story flow" on paper.
This is called a scenario. When writing the script, it is helpful to scout the location where shooting will take place, and, in the event of school activities or weddings, to obtain a copy of the program in advance, if possible. This will allow you to complete actual recording with a minimum of bother.

Typical scenario



Scene progression and narration

Simple outline sketches in a TV frame

- Recording time
- Camerawork
- SE (Sound Effect)—Background music and sound effects

Lighting

For the sharpest pictures, you need the best light

For the most brilliant color in you scenes, a sufficient light level must be maintained. If shooting is done indoors or under other circumstances where light is insufficient, lights must be used for best results.

Choosing the right lights

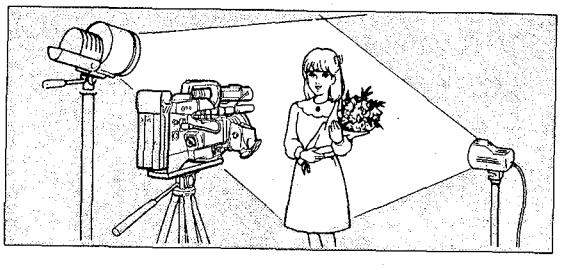
Photography lamps or halogen lamps are recommended.

For lighting of a wide area for easy use—
reflector flood light
To emphasize the subject—use a reflector spotlight.

Lighting the subject

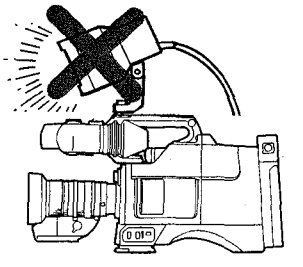
The number of lights and their angle to the subject can make a significant difference in lighting effectiveness.
With a single light:
Locate it above and to one side of the subjet. With just one light, contrast is unavoidably enhanced.
To eliminate shadows, another light should be added.
With two lights:
Locate one light above and to one side of the subject, and the second to the side of the subject in such a position that the shadows are eliminated.

If contrast is too strong when lights are used, point a light at the ceiling or reflect it off a sheet of white paper to add soft fill-in light.



Precautions for using lights

- Do not point the light at the camera body. Instead, make sure that it is pointed parallel to the camera or away from it. Be especially careful with lights attached to the accessory shoe.



- Floodlights (lights with wide dispersion) must not be attached to the accessory shoe. Use of a special light stand is recommended.
- Lights become extremely hot during use—do not touch them!
- Do not mix different types of light, as light color temperatures vary and can cause the subject's color to be recorded incorrectly.

For detailed instructions on proper use of lights, carefully read the instruction manuals that accompany them.

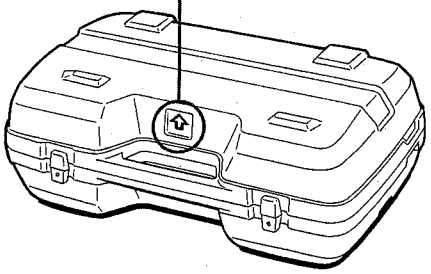
Optional Accessories and Recommended Equipment

Camera control unit: CCU-M3/M3P
Special-effects generator: SEG-2000A/2000AP, SEG-2550/2550P
Universal chroma keyer: CRK-2000/2000P
Wipe pattern extender: WEX-2000, WEX-2000P/PM
Portable videocassette recorder: VO-6800/6800PS
Electronic viewfinder (5-inch, B/W): DXF-50/50CE
Electronic viewfinder (4-inch, B/W): DXF-40A/40ACE
Electronic viewfinder (1.5-inch, B/W): DXF-325/325CE
Camera adaptor: CMA-8/8CE
Battery pack: NP-1A
Battery charger: BC-1WA/1 WACE
Zoom lens: VCL-810BX
Lens remote control unit: LO-27
Condenser microphone: ECM-672
Microphone holder: CAC-1, CAC-11A
Microphone cable: EC-0.5C2
Intercom headset: DR-100
Camera cable with Q-type 14-pin and K-type 14-pin connectors: CCQK-2
Camera cable with Q-type 14-pin and J-type 10-pin connectors: CCQJ-2
Camera cable with Q-type 14-pin connector: CCQ- 2BRS, CCQ-5BRS, CCQ-10BRS
Camera cable with Q-type 14-pin connector: CCQ-10AM, CCQ-25AM, CCQ-50AM, CCQ-100AM
Tripod attachment: VCT-12
Rack mounting metal: RMM-1800
Carrying case: LC-325
Title generator: TGR-325
2/3-inch lens adaptor LO-32BMT

Packing (Carrying Case LC-325)

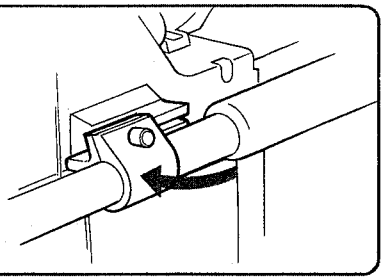
Opening carrying case LC-325

Open the case with this side on top.

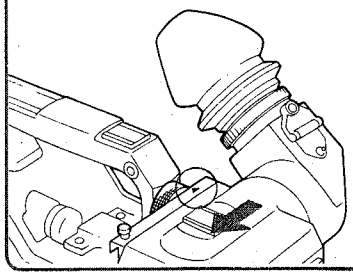


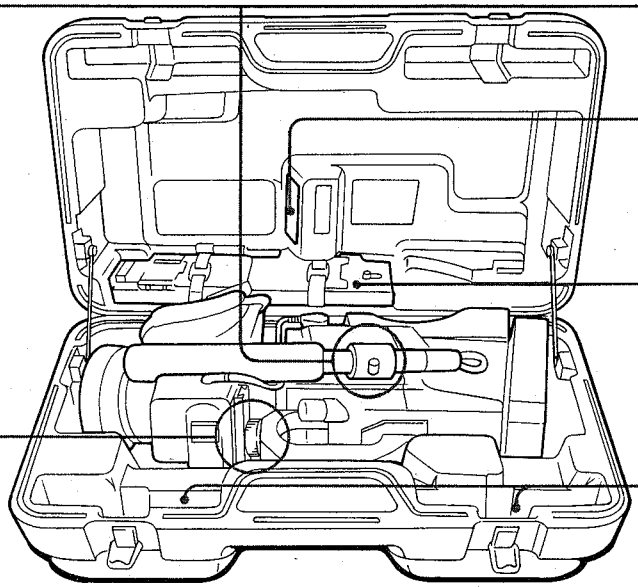
Packing

To store the camera with the microphone mounted
(When CAC-11A is used.)



Slide the viewfinder to the "▶" mark, and tighten the lock ring.





CCQ-2BRS camera cable

VCT-12 tripod adaptor

NP-1A battery pack